

SPACESHIPS  **STAR SYSTEMS**

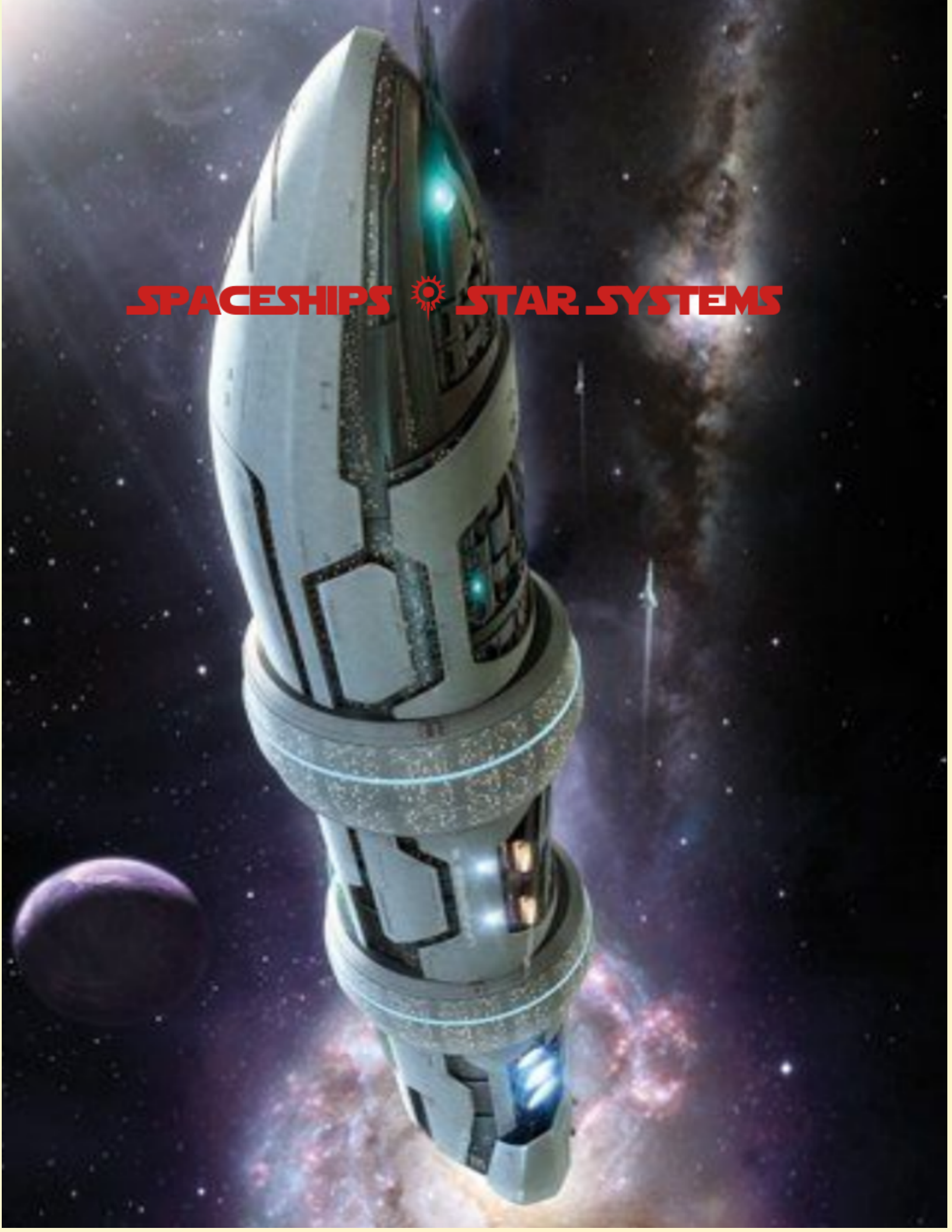


TABLE OF CONTENTS

Introduction.....	11
Basic Rules.....	11
Die Roll Conventions.....	11
The basic game mechanic.....	11
Common Target Numbers.....	12
Skills.....	12
Zero-Level Skills.....	13
Skill List.....	13
Languages.....	17
Skill Advancement.....	17
Increasing Skills.....	17
Learning Languages.....	17
Gaining Traits.....	17
Improving Characteristics.....	18
Character Generation.....	18
Step 1: Characteristics.....	18
Characteristic DMs.....	19
Using characteristic throws.....	19
Step 2: Homeworld Skills.....	20
Step 3: Career.....	20
Switching Careers.....	22
Career Tables.....	23
Agent:.....	23
Army:.....	24
Belter:.....	25
Colonist:.....	26
Elite:.....	27
Star Trooper:.....	28
Merchant:.....	29
Fleet:.....	30
Pirate:.....	31
Rogue:.....	32

Scholar:.....	33
Scout:.....	34
Life Events.....	35
Mustering Out Benefits.....	36
Retirement Pay.....	37
Aging.....	37
Aging Crisis.....	37
Aging and Technology.....	37
Prison.....	37
Injury Rules.....	38
Injury Effects.....	39
Repairing Injuries.....	40
Step 4: Calculate Stamina and Lifeblood.....	40
Step 5: Finalize the Character.....	40
Traits.....	40
Skill-Related Traits.....	41
Combat Traits.....	44
Prerequisite: Melee Combat 1.....	45
Commander.....	46
<i>Shake It Off</i>	46
<i>Close Quarters Combatant</i>	46
Vehicle and Spacecraft Traits.....	47
Ace.....	47
Other Traits.....	48
<i>Lucky</i>	50
Navigator.....	50
<i>Protector</i>	50
Spot Weakness.....	50
<i>Trash Talk</i>	50
Equipment.....	51
Encumbrance.....	51
Tech Levels.....	51
Living Expenses.....	53
Personal Armor.....	54
Cybernetics.....	55
Cybernetic Grades and Points.....	56
A-Grade Cybernetics:.....	56

B-Grade Cybernetics.....	56
C-Grade Cybernetics.....	57
R-Grade Cybernetics.....	58
Exploration and Personal Equipment.....	59
Pharmaceuticals.....	64
Robots.....	65
Robot design sequence.....	66
Sample Bots.....	68
Vehicles.....	70
Stat Block Explanation.....	70
Cepheus Engine SRD/Core Conversion Note.....	70
Grav Vehicles.....	71
Weapons.....	72
Stat Explanations.....	72
Weapon Aspects.....	72
Melee Weapons.....	73
Common Ranged Weapons.....	74
Common Small Arm Accessories.....	77
Common Heavy Weapons.....	77
Grenades and Explosives.....	79
Gunnery Weapons.....	80
Environmental Hazards.....	82
Disease and Poison.....	82
Extreme Temperatures.....	82
Fire.....	83
Falling.....	83
Radiation.....	83
Radiation Exposure Levels.....	83
Radiation Sickness.....	83
Starvation and Dehydration.....	84
Suffocation.....	84
Vacuum Exposure.....	84
Personal and Vehicle Combat.....	84
Combat Procedure Outline.....	84
Combat Rounds.....	85
Surprise.....	85
Initiative.....	85
Actions and Attacks.....	85

Melee Attacks.....	86
Frenzy.....	86
Ranged Combat.....	86
Ranged Combat DM Table.....	87
Aiming.....	87
Automatic Weapons.....	87
Suppressive Fire.....	87
Thrown Weapons.....	88
Blast Effects and Diving for Cover:.....	88
Grappling.....	88
Damage and Healing.....	88
Armor.....	89
Applying Damage.....	89
Knockdown.....	89
Wounds.....	90
Healing and Medical Care.....	90
Trauma Surgery.....	90
Vehicle Combat.....	92
Vehicle Movement.....	92
Chases.....	92
Dogfighting.....	93
Foot Chases.....	93
Possible Vehicle Maneuvers: Chases.....	93
Collisions:.....	94
Attacking Vehicles.....	94
Vehicle Penetration and Damage.....	95
Vehicle Penetration Matrix Table.....	95
Surface Damage Table Results.....	96
Repairs.....	98
Ground Force Weaponry against Starship-scale Targets.....	98
Starship-Scale Weaponry against Vehicle Targets.....	98
Starship Operations.....	100
Interplanetary Travel.....	100
Interstellar Travel.....	101
Interstellar Jump Procedure.....	101
Extending a ship's jump range.....	102
Skimming Jump catalyst from a gas giant.....	102
A ship's computers.....	102

Starship Expenses.....	102
Mortgage.....	102
Crew Salaries.....	102
Jump catalyst.....	103
Life Support.....	104
Port Fees.....	104
Maintenance.....	104
Starship Revenue.....	104
Passage.....	104
Available Freight and Passengers Table.....	105
Bulk Freight.....	105
Mail and Incidentals.....	106
Charters.....	106
Electronics and Sensors.....	106
Electronics and Sensors Table.....	106
Trade and Smuggling.....	107
Speculative Trade Procedure.....	107
1. Find a supplier.....	107
2. Determine goods available.....	107
Smuggling.....	108
Common Goods Table.....	108
Trade Goods Table.....	109
Modified Price Table: Roll 2D.....	110
3. Determine Purchase Price.....	111
4. Selling Goods.....	111
Traffic and Safety Modifiers.....	111
Traffic, Safety, and Legality Price Modifiers Table.....	112
Local Brokers.....	112
Ship Design and Construction.....	114
Ship Design Checklist.....	114
Ship Hull.....	115
Hull Configuration.....	115
Ship Armor.....	115
Drives.....	116
Jump Technology.....	117
Fuel.....	118
Starship & System Ship's Bridge.....	118

Small craft cockpit and accommodations.....	118
Jump Capable Small Craft Requirements.....	118
Electronics.....	119
Armament.....	120
Turrets.....	120
Weapons.....	120
Turret Weapons.....	122
Large Weapons.....	122
Bays.....	123
Main Guns.....	123
Shields.....	125
Ship Crew.....	125
Small Craft Crew.....	125
Ship Crews.....	125
Accommodations.....	126
Additional Components.....	127
Carried Vehicles.....	128
Cargo and Final Cost.....	128
Ship Presentation Format.....	129
TL12 100-ton Frontier Trader.....	129
TL 12 10,000 Ton Freighter.....	129
TL 12 300 Ton System Patrol Boat.....	129
TL 12 300 Ton Pirate.....	130
TL 15 100 Ton Frontier Courier.....	130
TL 12 150 Ton Free Trader.....	130
TL 12 100 Ton Prospector.....	130
TL 12 200 Ton Research vessel.....	130
TL 12 100 Ton Yacht.....	131
Small Craft.....	131
Gig.....	131
Ketch.....	131
Pinnace.....	131
Cutter.....	131
Alternate FTL Drive.....	132
Hyper-Drive.....	132
Grav Vehicle Design.....	133
Vehicle Design Checklist.....	133
Vehicle Chassis.....	134

Vehicle Configuration.....	135
Vehicle Configuration Options.....	135
Vehicle Armor.....	137
Vehicle Armor Options.....	137
Vehicle Drives.....	138
Vehicle Fuel.....	141
Range and Cruising Speed:.....	141
Table: Vehicle Agility Modifiers.....	141
Vehicle Drive Options.....	143
Vehicle Controls.....	143
Robot Brains.....	143
Vehicle Communication Systems.....	144
Sensors.....	144
Vehicle Armaments.....	144
Weapon Mounts.....	144
Vehicle Crew & Passengers.....	145
Life Support.....	146
Space Combat.....	147
Space Combat Basics.....	147
Position.....	147
Position Attack DM Table.....	148
Actions.....	148
Captain Actions.....	148
Pilot Actions.....	148
Sensor Operator Actions.....	149
Gunner Actions.....	149
Streamlined Turret Fire.....	150
Streamlined Point Defense for ships up to 999 tons.....	150
Streamlined Point Defense for ships of 1000+ tons.....	151
Engineer Actions.....	151
Starship Damage.....	152
Ship Penetration Matrix Table.....	152
Surface Hits Table.....	152
Internal Hits Table.....	152
Radiation Hits Table.....	153
Surface and Internal Hit Descriptions.....	153
Repairing Damage.....	156

Starship Encounters.....	156
System Types.....	156
Encounter Generation Procedure:.....	157
Ship Encounter Table.....	157
Ship Descriptions:.....	158
Encounter Frequency and Range.....	158
Reaction Roll.....	158
World Generation.....	160
Star Mapping.....	160
World Creation.....	160
World Size.....	161
Atmosphere.....	162
Hydrographics.....	163
Population.....	164
Government.....	164
Law Level.....	166
Starport.....	166
Tech Level.....	168
Trade Codes.....	169
Bases.....	171
Travel Zones.....	171
Allegiances.....	172
Communication and Trade Routes.....	172
World Presentation.....	173
Appendix A – The Universal World Profile (UWP).....	174
Sample Frontier Subsector Longway.....	175
Longway Subsector.....	176
Extended System Generation.....	177
NPC Presentation Format.....	177
Xenofauna Encounters.....	177
Animal Generation Process.....	178
Terrain and Ecosystem.....	178
Animal's Niche and Subtype.....	179
Animal Size, Stamina, Lifeblood, and Damage.....	180
Animal weapons, armor, and base speed.....	181
Animal Movement Speed.....	184
Animal Reactions.....	185

Appendix - Cheating Death!	186
Cyborg Conversion	186
Bio Reconstruction	189
Appendix - Aliens	192
Appendix - Legal	194
Important notice	194
Open Game License Version 1.0A	195

Introduction

Spaceships & Star Systems is a 2D6 based space TTRPG. Unlike some prior games in this genre there is no system of magic (under any guise or name). It is a grittier flavor of space opera. This game is broadly compatible with most prior 2D6 Space based TTRPGs.

Basic Rules

Die Roll Conventions

Spaceships & Star Systems uses common six-sided dice. We note each die you need to roll as a “D”. Unless noted otherwise, “2D”, for example, means “roll two dice and add the results together”.

In this game, DM means Dice Modifier – a number you add or subtract from a dice roll. For example, “2D, DM-2” means “roll two dice, add the results together, and then subtract 2 from the total”.

Another die roll type is “D66”. In that case, throw two six-sided dice, but do not add the results together. Instead, use one die as the “tens” and the other as the “ones”, providing 36 results.

The basic game mechanic

The basic mechanic of Spaceships & Star Systems is the throw, and when we say this, we mean dice throw. Throw 2D, add the relevant skill and characteristic DMs, and if the total is equal or higher than the target number, you succeed. For example, “throw Athletics/STR 8+” means “throw 2D and add your Athletics skill level and Strength Dice Modifiers; if the total is 8 or more, you succeed” The amount by which your total throw exceeds or misses the target number is called the Effect.

If a task is even remotely feasible, a natural (unmodified) roll of 2 is always a failure, while a natural (unmodified) roll of 12 is always a success. This is regardless of target numbers or further circumstances.

Opposed throws: in a situation where two characters oppose each other in an attempt, for example, a spy trying to sneak past a guard, each character throws 2D plus the appropriate skill and characteristic modifier; the higher roll wins. On a tie, the character with the higher total DM to the throw (from skill, characteristics, etc.) wins. If both characters are equally competent, reroll the tie.

Unskilled characters: if a character attempts a throw with a skill they do not possess, they suffer DM-3 to that throw.

Trying Again: generally, you may retry failed skill or characteristic throws. However, in some cases failure has consequences: failing a Demolitions throw might mean having a bomb explode in your face. This instance precludes the possibility of second chances.

Note that skilled characters are competent and can usually practice their trade or profession, under normal conditions, without a throw. Use throws only when the characters are at serious risk or under pressure, such as time pressure, opposition, or adverse conditions. For example, a physician (Medicine 3) can give effective first aid without requiring a throw and can help characters recover from serious wounds but would have to make a Medicine throw to treat a genetically engineered disease.

Collaboration

In some cases, characters may work together on a task throw. The character with the highest skill and characteristic makes the main skill throw. Any assistant can make a skill throw at the same difficulty as well; if they succeed, add DM+1 to the primary character’s throw; if they fail, the primary character suffers no penalty. There can only be one assistant to the main skill throw. However, the Referee is encouraged to allow other characters to assist the assistant. Each throw has the same difficulty as the original skill throw. Note that characters who are assisting in the throw do not necessarily have to use the same skill. If the player and Referee agree, a related skill task throw can assist. For example, a ship’s engineer might throw Engineering to assist the Pilot’s skill throw. Teamwork!

Common Target Numbers

The table below provides guidelines for Referees to set Target Numbers. Any Target Number below 4+ is probably not worth calling for a throw.

Difficulty	Target Number	Examples
Easy	6+	Repairing a damaged vehicle system in a properly equipped workshop
Average	8+	Shooting a target in Effective range
Difficult	10+	Shooting a target beyond Effective range
Formidable	12+	Landing a ship in a hurricane with a damaged engine, under enemy fire
Impossible	14+	Anything that the Referee would find amusing

Advantage

In certain advantageous situations, specifically related to Traits and cybernetics, the rules may grant you an *Advantage*. In this case, throw 3D, and choose the 2 highest die results.

Skill Level Equivalence Examples			
Skill Level	Expertise	Engineering	Medical
0	Basic training	Wiper	First Aid trained
1	Journeyman	Power officer	EMT or Nurse
2	Professional	Third Engineer	New physician or Nurse practitioner
3	Accomplished professional	Second Engineer	Experienced physician
4	Specialist/expert	Chief engineer	Chief Anesthesiologist
5	System wide expert	Captain Scott	Dean of top medical school

Fatigue

Fatigue is common in the demanding sci-fi future. When Fatigued, a character suffers DM-2 to all throws. 8 hours of rest remove Fatigue.

Skills

Characters in Spaceships & Star Systems use a variety of skills to confront the challenges awaiting them among the stars, from piloting a starship to shooting a blaster.

Skills are a character’s greatest asset. Skilled characters are competent. A Skill at level 1 (denoted “Skill 1”) represents someone who is employable; Skill 3 denotes a trusted professional; and Skill 5 represents a world-class expert. For

example, a newly trained paramedic has Medicine 1; an experienced physician has Medicine 3; and a cutting-edge cyber-surgeon, skilled beyond the typical physician, has Medicine 5. The task resolution system takes this into account – professionals should automatically succeed at routine tasks (difficulty 6+) and easily perform average tasks (difficulty 8+), while experts will automatically succeed in routine and average tasks and easily manage difficult (10+) ones.

A note about skills: Spaceships & Star Systems skills are somewhat different than those found in other D6 Space game rules but are easily compatible. Most notably, Repair is the combination of Electronics and Mechanics; Admin subsumes the Advocate skill; Carousing subsumes the Gambling skill.

Zero-Level Skills

Normally, a character is either skilled in a task or unskilled. In the latter case, they suffer DM-3 for lacking the appropriate skill. However, to facilitate play, we recommend that the Referee grant a few skills as “Zero-level” to each character at the start of the game. This means that while the character is not skilled enough to hold down a job with that skill, and does not enjoy a positive DM on rolls, the character is familiar enough with that skill to avoid the unskilled penalty (DM-3). The recommended Zero-level Skills for all adventurers are shown in the table below.

Zero-Level Skills	
Military and Paramilitary Characters	Purely Civilian Characters
Athletics	Athletics
Drive	Drive
Gun Combat	Zero-G
Melee Combat	
Zero-G	

Skill List

The skills included below are comprehensive, though there can be overlaps between two or more skills, depending on the context of the skill use in question, the players, and the Referee. We advise a certain amount of flexibility to keep the game moving.

Admin: understanding and dealing with bureaucracies, businesses, and the law. Also covers forgery.

Examples: Throw Admin/EDU 8+ to properly apply for a residency visa. Throw Admin/Int opposed by Investigation/Int to forge a cargo manifest to show a fake planet of origin. Throw Admin/EDU 10+ to convince customs to not conduct a detailed inspection of the starship.

Aircraft: controlling and using atmospheric aircraft. This skill covers navigation and basic maintenance, but not repairing damage.

Examples: throw Aircraft/DEX 7+ to safely land an airplane in stormy weather without automatic piloting. Throw Aircraft/EDU 7+ to plot out a long flight path that minimizes flight time.

Animals: the care and training of animals. Also covers riding and general agriculture.

Examples: throw Animals/DEX 8+ to avoid falling from a mount when the animal is startled. Throw Animals/EDU 6+ to diagnose a common ailment with your farm animal.

Athletics: the ability to exert oneself physically. You may add the Athletics skill to appropriate physical characteristic rolls. This skill is never rolled unskilled.

Examples: throw Athletics/END 8+ to swim against a strong current. To move past obstacles on a course while running, throw Athletics/DEX 8+. To climb an unknotted, vertical rope, throw Athletics/STR 8+.

Carousing: the art of mingling in social settings to achieve your goals. Also covers gambling.

Examples: throw Carousing/SOC 7+ to gather useful rumors at a gathering. Throw opposed Carousing/INT to to beat someone at poker.

Computer: programming, working with computer hardware, and hacking. This skill also covers the use of sensors and communications gear.

Examples: throw Computer/EDU 8+ to find malware on a computer. Throw Computer/EDU 8+ to hack a government server and download a database, -1 to the roll for every TL >10 of the computer system. Throw Opposed Computer/EDU to jam another ship's radio comm.

Deception: convincingly avoiding the truth and misleading other people. This skill covers sleight-of-hand and disguise as well.

Examples: throw Deception/SOC 10+ to fool a security guard to let you pass while posing as a visiting worker. Throw Deception/INT opposed by Investigation/INT to lie during questioning and not be discovered. Throw Deception/INT 12+ to fool a lie detector. Throw Deception/DEX 8+ to palm a small item (can be opposed by Investigation).

Demolitions: working with explosives to blow stuff up! This skill also covers defusing said explosives before they blow up!

Examples: throw Demolitions/INT 8+ to defuse an average bomb. An Effect of -4 or will causes detonation. Throw Demolitions/EDU 10+ to demolish a bridge using the least explosives. Throw Demolitions/INT 8+ to construct and plant homemade fragmentation mines.

Driving: controlling and using ground vehicles. This skill covers navigation, as well as basic maintenance, but not repairing damage.

Examples: throw Driving/DEX 9+ to jump over a drawbridge with a two wheel vehicle. Throw Driving/EDU 8+ to navigate through featureless terrain on a long-distance trip. Throw Driving/DEX 10+ to pull a 180 degree turn and parallel park, all in one motion.

Engineering: using and maintaining of starship drives, powerplants, and other systems specific to starships. Engineering is the required skill for Jump drive operation. This skill is not a substitute for the Repair skill (below).

Examples: throw Engineering/EDU 6+ to determine a ship's performance and tonnage. Throw Engineering/INT 10+ to temporarily fix a damaged drive. More Engineering actions are presented in the [Space Combat](#) and [Starship Operations](#) sections.

Grav Vehicles: controlling and using gravitic vehicles. This skill also covers navigation and basic maintenance, but not repairing damage.

Examples: throw Grav Vehicle/INT 8+ to fly a grav-disc through a severe thunderstorm. Throw Grav Vehicle/INT 10+ to fly NOE at supersonic speeds.

Gun Combat: using small arms, crossbows, and bows in combat.

Examples: throw Gun Combat/DEX 8+ to hit a target in Effective range with a handgun. Throw Gun combat/DEX 10+ to hit a target at Maximum range. See the Combat chapter for more information.

Gunnery: using vehicle-mounted or spaceship-mounted weapons.

Examples: throw Gunnery/INT 8+ to hit a ship in space combat. More information in the [Combat](#) and [Space combat](#) chapters.

Heavy Weapons: using plasma guns, rocket launchers, and other portable heavy weapons.

Examples: throw Heavy Weapons/INT 8+ to hit a target in Effective range with a plasma gun. Throw Heavy Weapons/INT 10+ to hit a target at Maximum range with a guided missile launcher.

Investigation: keen observation, forensics, research, and detailed analysis.

Examples: throw Investigation/INT 6+ to find and copy fingerprints from a crime scene. Throw Investigation/EDU 10+ (or opposed by someone's Admin/EDU) to discover evidence of fraud or other illegalities in a business' accounting practices. Throw Investigation/INT 10+ to find concealed spaces, or to notice that a crime scene was tampered with prior to being discovered. Throw Investigation/INT 8+ to perform surveillance on a target (can be opposed by Recon or Stealth).

Jack o' Trades: this special skill reduces the unskilled penalty (DM-3, noted above) by its level. For example, a character with Jack o' Trades at level 2 would only suffer DM-1 to all unskilled rolls. You may not gain more than 3 levels in this skill and cannot improve it after character generation.

Leadership: motivating and directing others, often in times of crisis.

Examples: throw Leadership/INT 8+ to rally Shaken troops. See the [Combat chapter](#) for other uses of this skill.

Liaison: negotiation and diplomacy in a myriad of social situations. This skill covers diplomatic meetings, haggling in interstellar trading negotiations, and talking down a gunman who is holding hostages.

Examples: throw Liaison/SOC 8+ to make a deal with a slightly suspicious merchant from a different civilization. Throw Liaison/INT 8+ to read a room and determine the person who really makes the decisions. Throw Liaison/EDU 10+ to understand proper etiquette when dealing with a culture with a stratified class system. Throw Liaison/INT opposed by Liaison/INT to get the price you want in a purchase negotiation.

Medicine: training in the medical sciences, from diagnosis and triage to surgery.

Examples: throw Medicine/DEX 8+ to perform Trauma Surgery (see the Combat chapter). Throw Medicine/EDU 8+ to diagnose a common disease. Throw Medicine/INT 10+ to spot that someone in a small crowd is seriously ill. Throw Medicine/EDU 6+ to correctly dress or treat a minor wound or injury.

Melee Combat: fighting hand-to-hand, either with a weapon or unarmed.

Examples: throw Melee Combat/STR 7+ to hit a target with a sword. See the Combat chapter for more detailed examples.

Piloting: operating, controlling, and navigating interplanetary and interstellar space craft, both in real space and in jump space.

Examples: throw Piloting/EDU 8+ to plot a jump course. Throw Pilot/INT 10+ to land on a hostile planetary surface with no landing pad. See the [Starship Operations](#) and [Space Combat](#) chapters for more on the Pilot skill.

Recon: scouting for danger and spotting threats, including traps. Recon also covers performing forward observation for artillery.

Examples: throw Recon/INT 9+ to correctly identify the composition of a concealed enemy force. Throw Recon/INT 10+ to identify a likely ambush zone. Throw Recon/INT 8+ to call down an airstrike on a large stationary target, such as a building. Throw Recon/INT 8+ to track a target in the wilderness. Throw Recon/INT 12+ to locate an expertly hidden trap. (Or make an opposed Recon/INT roll)

Repair: the ability to maintain, repair and build mechanical and electronic devices of all sorts. This skill also covers lock picking, both mechanical and electronic. Ship-specific systems are handled by the Engineering skill, and Computers covers the use of electronic devices.

Examples: throw Repair/INT 6+ to repair a damaged vehicle at a workshop. Throw Repair/INT 8+ to do the same repairs, but in one night. Throw Repair/EDU 8+ to restore a vehicle that is no longer functioning. For all these tasks, the character will need an ample supply of parts.

Science: the multi-disciplinary scientific skill, as would be typical for a starship's science officer.

Examples: throw Science/EDU 8+ to identify rare minerals in an asteroid using the ship's sensors. Throw Science/EDU 10+ to predict how a new compound might affect equipment or systems. Throw Science/EDU 12+ to understand the functions and how to operate a completely alien and advanced piece of equipment/item.

Stealth: the ability to be unseen and unheard, both while stationary and moving.

Examples: Make an opposed throw of Stealth/DEX vs. a guard's Recon/INT, or Stealth/INT (whichever is better) to sneak past the guard. Throw Stealth/DEX 8+ to hide from searchlights. Throw Stealth/INT 10+ to hide from IR searchlights. Throw Stealth/END 8+ to hide and stay motionless for long periods. Bypassing more advanced sensors and security systems require specialized equipment and difficulty. Those without Stealth or Recon roll to spot interlopers unskilled.

Steward: the care and serving of passengers and other guests. On small ships also acts as a Purser. Steward skill adds to the throw for attracting High Passage passengers. See the [Starship Operations](#) chapter.

Examples: throw Steward/INT 6+ to endear an upper- class passenger and gain some valuable information. Throw Steward/EDU 8+ to know some basic information about the cultural proclivities of a passenger to make them more comfortable. Throw Steward/DEX 6+ to mend clothing and groom the crew to a presentable level. Throw Steward/INT 8+ to prepare a sumptuous meal.

Streetwise: familiarity with underworld society and the ways of working with it. The Streetwise skill adds to the throw for finding Low Passage passengers (see the Starship Operations chapter for more details).

Examples: throw Streetwise/STR 8+ to intimidate gang members. Throw Streetwise/EDU 7+ to understand criminal slang. Throw Streetwise/INT 8+ to locate a bookie, fence or fixer. Throw Streetwise/INT 8+ to shadow someone in an urban environment. Throw Opposed Streetwise/INT to lose a shadow. Throw Streetwise/SOC 10+ to arrange a meet with important criminals.

Survival: staying alive in the wilderness. This also covers "outdoor" skills such as tracking, foraging, navigation, and fishing.

Examples: throw Survival/INT 8+ to track your quarry through wilderness. Throw Survival/EDU 10+ to navigate through a steaming jungle. Throw Survival/EDU 8+ to determine just what sort of apex predator is hunting you. Throw Survival/EDU 9+ to find enough water for yourself to survive in a desert.

Tactics: tactical planning and decision making, whether on the ground or in space.

Examples: throw Tactics/INT to determine Initiative in combat (see [Combat chapter](#)). Throw Tactics/EDU 12+ to predict the enemy's battle plan using historical examples and current intel. Throw Tactics/INT 8+ to set up good firing positions for heavy weapons.

Watercraft: controlling and using watercraft, including submarines. This skill includes navigating these vehicles, as well as performing basic maintenance, but not repairs.

Examples: throw Watercraft/DEX 6+ to pilot a small motorboat through a storm without swamping. Throw Watercraft/DEX 12+ to sail a boat through a series of reefs and emerge unscathed, during a storm. Or, Watercraft/INT 12+ to direct others to do so. Throw Watercraft/EDU 10+ to plot the circumnavigation of a planet.

Zero-G: working and living under microgravity conditions. Also covers the use of space suits and heavy armor. When characters are in combat in microgravity, they should use the lower of their combat or Zero-G skill.

Examples: throw Zero-G/DEX 6+ to traverse harsh terrain in microgravity conditions on an asteroid. Throw Zero-G/DEX 8+ to fire a weapon at boarders in microgravity. Throw Zero-G/STR 8+ to grapple someone in microgravity. Throw Zero-G/EDU 8+ to troubleshoot a malfunctioning space suit.

Languages

Characters know a number of languages, in addition to their cultures' standard language, equal to their EDU modifier (see Characteristic Modifiers in **Chapter 4: Character Generation**). After character generation, characters may learn additional languages using the experience rules (see below) by purchasing the language for 8 XP. There are no skill levels of a language; either a character knows that language or they do not. The Referee is free to allow a Level 0 version of a language skill, representing a basic understanding of the language.

Skill Advancement

Spaceships & Star Systems characters can slowly advance in skill through experience. Players advance their characters by spending Experience Points (XP). A Character will typically gain 1 XP per session. The Referee might award 2 XP for a session where the *player* did an outstanding job, or if the *character* was very successful. Characters can only advance skills during downtime in game: during periods of relative quiet and inactivity. Note that advancement is incremental: for example, to increase a skill from Level 1 to Level 3, the character must first purchase Level 2 and only then Level 3. In general, use of XP should allow a character to increase one skill by one level per game year.

Increasing Skills

Spend XP to increase skills per the following table. Skills can be improved by exercise or study, represented by spending XP, as noted in the table below.

Skill Level XP Cost

Desired Skill Level	XP Cost
0	2
1	10
2	20
3	20
4	30
5	40

Note, however, that the total sum of a character's skill levels still may not exceed the sum of their current INT + EDU characteristics. If using Level 0 skills, these do not count towards the maximum skill levels.

Learning Languages

You may learn a new language by investing 8 XP.

Gaining Traits

You may gain a new Trait by investing 30 XP. The character must meet all the prerequisites to purchase the Trait.

Improving Characteristics

Any characteristic, except for Social Standing may be increased via XP expenditure,.

To improve a characteristic, by one point, spend XP equal to three times the new value. So, to improve a characteristic from 7 to 8 costs 24XP. The human maximum for any characteristic is 15, and the number of times a given characteristic may be improved is twice. Social standing can only be improved by social advancement, which is accomplished through role-playing and successful adventuring.

Character Generation

Your character starts the game as a skilled, experienced adult. This chapter will show you how to generate a character and take them through a career.

Step 1: Characteristics

Characteristics describe your character's general talents and abilities. They serve as basic skills – for tasks which every human (or alien!) can perform, but some can perform better or worse than others. They also modify your character's skill throws, representing your natural aptitude with various tasks.

Divide and assign 45 points to the six characteristics. No characteristic may start lower than 2 nor higher than 12.

The characteristics are:

Strength (STR): Physical prowess and brute force.

- Strength determines a character's carrying capacity.
- Add your STR DM to your melee *damage*. Note, however, that even with low STR, any attack that hits does at least 1 point of damage (before armor).
- Strength modifies skill throws related to brute force and feats of raw might.

Dexterity (DEX): Agility, coordination, and speed.

- Dexterity is the attribute used for throwing knives and grenades, as well as evading physical threats.
- Add your DEX DM to your *ranged attack throws*.
- Dexterity modifies skill throws related to coordination and speed.

Endurance (END): Physical resilience, fitness, and force of will.

- Endurance helps the character resist biological threats such as disease and poison.
- Endurance determines your character's Stamina and Lifeblood, representing toughness and resistance to damage, respectively (see below).
- Endurance modifies skill throws related to physical resilience.

Intelligence (INT): Reasoning, creativity, and intellectual capabilities.

- Together with EDU, Intelligence determines the character's maximum number of skill ranks.
- Intelligence modifies skill throws related to reasoning, creativity, spatial problems and perceptiveness.

Education (EDU): Formal schooling and general knowledge.

- Education 8+ allows rolling on the Advanced Education column in the career tables.
- A character gains a number of additional languages equal to their EDU DM.
- Together with INT, Education determines the character's maximum number of skill ranks.
- Education modifies skill throws related to academics, science, and knowledge.

Social Standing (SOC): A character's connections and position in society.

- Social Standing provides characters with a number of free contacts equal to their SOC DM.
- Social Standing often modifies skill throws in social settings.

Characteristic DMs

Each characteristic has an associated Dice Modifier (DM) based on its value or score, as noted below:

Characteristic DMs	
Characteristic Score	Characteristic DM
0-2	DM-2
3-5	DM-1
6-8	DM+0
9-11	DM+1
12-14	DM+2
15-17	DM+3
18-20	DM+4

Above 20, a character increases their characteristic DM by another +1 per three points – for example, 21-23 will have DM+5, and so on. This means that very powerful creatures will almost automatically succeed in throws using their powerful characteristic. This is intentional: a massive alien brute, for example, would be capable of feats of strength unattainable by most humans.

Using characteristic throws

Characteristics represent general human (or alien!) capabilities that every character possesses to one degree or another. This is opposed to skills, which represent specialized training. These include things such as fitness and agility (STR, END, and DEX), general reasoning (INT), general knowledge (EDU), and using connections and social innuendo to further one's ends (SOC). Anyone can solve simple problems (INT), but not everyone can pilot a starship (Piloting skill). However, general aptitudes do influence even the actions of professionals, for example the INT DM is often added to Piloting ship skill throws.

Characteristic throws use only the Characteristic DM, rather than Characteristic + Skill. Characteristic throws do not suffer the DM-3 Unskilled penalty. Characters never suffer the DM-3 Unskilled penalty for Athletics throws.

Example: A character with EDU 5 tries to recall a piece of trivia. The Referee calls for an EDU characteristic roll. The roll is 2d6, DM-1.

Step 2: Homeworld Skills

At the age of 18, before embarking in a career, your character has already learned a single skill. Choose a homeworld type and one skill from its list.

Homeworld	Available Skills (choose one)
High-tech world	Computer-1, Grav Vehicles-1, Streetwise-1
Water World	Watercraft-1, Repair-1, Athletics-1
Capital World	Carousing-1, Grav Vehicle-1, Liaison-1
Frontier colony	Driving-1, Watercraft-1, Survival-1, Gun Combat-1
Inhospitable outpost	Repair-1, Science-1, Zero-G-1
Primitive backwater	Animals-1, Recon-1, Survival-1

Step 3: Career

Characters start off at the age of 18. Then they “grow” through the character generation system.

Note that the total sum of a character’s skill Levels can never exceed the sum of their INT + EDU characteristics.

However, first generate the character and list all skills, even if they exceed this limit. After Mustering Out, if the total of your skill points exceeds the sum of your INT + EDU, you may choose which skills to reduce to bring your total under the character’s INT + EDU. You may reduce skills to Level Zero, as they do not count against the character’s skill level total.

The Referee determines the number of career Terms characters will go through prior to the game’s start. Each Term represents roughly 4 years.

A. **Term 1:** Select a career. Your character begins their career at Rank 0.

1. Note your career’s Service Skills. You can raise one Service Skill to level-1. The rest of the Service Skills are Level 0.
2. Pick **TWO** skill levels from that career’s available skills tables: Service, Specialist, or Advanced Education.
 - i. Characters must have an EDU 8+ to select from the Advanced Education table.
 - ii. A maximum of ONE skill level per term may be spent to improve any Characteristic by +1.
 - iii. No skill level may be higher than 2 in the **first term**.
 - iv. Roll on the Career’s Event Table. This might increase the number of skills the character receives, or even cause injury. Note that if an event calls for a skill test, do not include any Attribute DMs. Just throw 2D and add the skill level, if any. If the character does not have the listed skill, do not apply any penalty.
3. Increase the character’s age by 4 years to 22 years old.

B. Second and Subsequent Terms: Select skill levels from available tables.

1. As characters advance their careers, the number of skill levels available per term decreases. See the Master Character Generation Table, below.
2. A maximum of one skill level per term may be spent to improve any characteristic by +1.
3. Increase career Rank by 1 each term. Add additional Bonus Rank skills as indicated on the Rank Table.
4. Roll on the Career's Event Table.
5. Increase the character's age by 4 years.
6. Roll for **Aging Effects** at the end of Term 6 and subsequent Terms.

C. Mustering Out:

1. **Roll for Mustering Out Benefits** on the relevant career table. The number of Mustering Out Benefits is equal to 1, plus 1 per term served. The player may choose to roll on the Cash Benefits or Material Benefits table for each roll.
2. **Rank as Mustering Out Benefit:** you may purchase additional Rank levels with a Mustering Out Benefit. Each promotion costs one Mustering Out Benefit. Gain any Rank skills at appropriate ranks.
3. **OPTION:** The Referee may assign additional level-0 skills (see the Skills chapter).
4. **OPTION:** The Referee may wish that each character have a skill from a given Skill Package (see below) *in addition* to their career skills. Select one skill from the indicated Skill Package at this time. Each skill from a Package may only be selected once, by one character.
5. Select 1 **Trait** from the Traits chapter for every 2 terms served, rounding up (see Master Character Generation Table, below).

Skill Packages

Campaign Style	Skills Available
Exploration	Piloting-1, Engineering-1, Survival-1, Science-1, Repair-1
Military	Leadership-1, Gunnery-1, Melee Combat-1, Heavy Weapons-1, Tactics-1
Fleet	Piloting-1, Computer-1, Repair-1, Gunnery-1, Engineering-1
Trading	Piloting-1, Engineering-1, Liaison-1, Medicine-1, Steward-1
Criminal	Streetwise-1, Stealth-1, Admin-1, Recon-1, Deception-1

Master Character Generation Table

Terms	Skill Levels Granted	Total Skill Levels*	Aging?	Rank Increase?	Traits	Mustering Out Benefit Rolls	Total Events
0	1 (homeworld)	1	N		1	1	0
1	2, plus a level 1 service skill	4	N		1	2	1
2	2	6	N	+1	1	3	2
3	2	8	N	+1	2	4	3
4	1	9	N	+1	2	5	4
5	1	10	N	+1	3	6	5
6	1	11	N	+1	3	7	6
7	1	12	Y		4	8	7

* As noted above, regardless of homeworlds, careers, and packages, the total number of skill ranks a character may possess may not exceed the sum of their INT and EDU Characteristics.

Switching Careers

At the end of a character's first and second term they may switch to a new career. The character begins at Rank 0, unless they are in a military career and switching into another military career—in that case, keep the character's rank level the same but use the new military branch rank name.

Characters in their new career receive ONE Service Skill at Level-0, and then proceed normally in their new career, using the Master Character Generation Table to determine how many skill levels they may pick in their new profession.



Mustering Out Benefits are rolled on the appropriate career table. Reduce the total number of Benefit rolls by one for each career change to reflect the hardships that starting a new career often entail.

Career Tables

Agent:

You were a police officer, government or corporate spy, or private investigator.

Service Skills			Specialist Skills		Advanced Education
Investigation			Deception		Admin
Admin			Gun Combat		Computer
Computer			Grav Vehicles		Liaison
Streetwise			Athletics		Science
Carousing			Driving		Medicine
Stealth			Recon		Leadership
Rank	Title	Bonus Skill	Mustering Out Benefits		
0	Agent		1D6	Cash	Materials
1	Special Agent		1	1,000	Low Passage
2	Sp. Agent in Charge		2	5,000	+1 INT
3	Unit Chief	Admin-1	3	10,000	Weapon
4	Section Chief		4	10,000	Contact
5	Assistant Director		5	20,000	+1 SOC
6	Director		6	50,000	High Passage
2D	Agent Event				
2	Injury. Roll on the Injury table, but you are not ejected from your career.				
3	Cybered! Your employer pays for advanced cybernetic implants. Gain Cr8,000 worth of cybernetics.				
4	Dangerous Mission. You are assigned to a dangerous mission above and beyond your normal duties. Roll Recon 8+, Streetwise 8+, or Gun Combat 8+. If you succeed, gain a bonus: an additional Benefit roll. If you fail, roll on the Injury table.				
5	Specialist Training. You receive advanced training. Throw EDU 8+ to increase any one skill by one level.				
6	Labor Dispute. Your employers send you to infiltrate a group of striking workers or civilian protesters. If you try to avoid bloodshed, you give up your after-action bonus but gain the union leader as a Contact; Or you can doom the movement and gain another Benefit roll from the after-action bonus. However, the union leader escapes, and you gain them as an Enemy.				
7	Life Event. Roll on the Life Event table.				
8	Undercover. You participate in an undercover operation. Throw Streetwise 8+ or Deception 8+. If you succeed, pick one skill from the Specialist Skill table of the Rogue career. If you fail, roll on the Injury table.				
9	Trusted Informant. You recruit a close informant. Throw Streetwise 8+ to gain a Contact.				
10	Kidnapping Rescue. You participate in an operation to rescue a kidnapping victim. Throw Investigation 8+ or Stealth 8+; succeed, and you gain a hostage VIP as a Contact; fail and throw on the Injury Table.				
11	Mentor. A senior officer befriends you. Gain Leadership or Admin and a Contact.				
12	Conspiracy. You uncover a major conspiracy and are promoted as a reward. Gain one skill level and one rank. The nature of this conspiracy is at the Referee's discretion.				

Army:

You served in a planetary military or mercenary force.

Service Skills			Specialist Skills		Advanced Education
Gun Combat			Repair		Computer
Recon			Tactics		Admin
Heavy Weapons			Stealth		Medicine
Melee			Demolitions		Jack of All Trades
Driving			Survival		Leadership
Athletics			Grav Vehicles		Gunnery
Rank	Title	Bonus Skill	Mustering Out Benefits		
0	Private		1D6	Cash	Materials
1	Lieutenant	Leadership-1	1	1,000	Low Passage
2	Captain		2	5,000	+1 INT
3	Major	Tactics-1	3	10,000	Weapon
4	Lt. Colonel		4	10,000	Mid Passage
5	Colonel		5	20,000	Weapon
6	General	SOC+1	6	50,000	High Passage
2D	Army Event				
2	Injury. Roll on the Injury table, but you are not ejected from your career.				
3	Cybered! The military pays for advanced cybernetic implants. Gain Cr8,000 worth of cybernetics.				
4	Hostile World. You are stationed on a world with a hostile or wild environment. Gain one of Animals, Survival, or Zero-G.				
5	Street Fighting. You fight a battle in an urbanized area. Gain one of Tactics, Stealth, or Streetwise.				
6	Budget Cuts. Your government cuts your unit's budget. Throw Admin 8+ to regain funds for your unit; if you succeed, gain your unit's commander as a Contact. If you fail, gain a government official as an Enemy.				
7	Life Event. Roll on the Life Event table.				
8	Police Action. You are involved in counter-insurgency operations. Throw DEX 8+ or END 8+. If you succeed, gain Liaison, Recon, Leadership, or Tactics. If you fail, roll on the Injury table.				
9	Garrison. You are assigned to garrison duty. Gain one of Admin, Carousing, or Streetwise.				
10	Bug Hunt! You fight hostile xenofauna. Throw Gun Combat 8+; if you succeed, gain Animals or Survival. If you fail, roll on the Injury Table.				
11	Electronic Warfare. You train in advanced SIGINT and cyber-warfare techniques. Gain a level in Computer.				
12	Advancement. Your heroic service in battle gains you a promotion. Gain one free skill level and increase your rank by one.				

Belter:

You were a hard-working asteroid miner or other blue-collar spacer.

Service Skills			Specialist Skills		Advanced Education
Repair			Jack of All Trades		Admin
Demolitions			Carousing		Medicine
Piloting			Engineering		Grav Vehicles
Computers			Streetwise		Liaison
Zero-G			Gunnery		Science
Athletics			Melee Combat		Leadership
Rank	Title	Bonus Skill	Mustering Out Benefits		
0	Miner		1D6	Cash	Materials
1	Roughneck		1	1,000	Low Passage
2	Crew Boss		2	5,000	+1 INT
3	Foreman		3	5,000	Space Suit
4	Rep	Admin-1	4	10,000	Mid Passage
5	Senior Rep		5	30,000	+1 EDU
6	Local President		6	100,000	Prospector
2D	Belter Event				
2	Injury. Roll on the Injury table, but you are not ejected from your career.				
3	Specialist Training. You get on-the-job training. Gain one of Computer, Science, Administration, or Demolitions.				
4	Explosion. An impending mining explosion threatens your ship or mine. Zero-G 8+. If you succeed, gain Demolitions; if you fail, roll on the Injury Table.				
5	Protection Racket. Pirates organize a protection racket in your belt. If you pay, lose one Benefit roll. If you resist, throw Gun Combat 8+ or Melee Combat 8+. If you succeed, gain Streetwise but also a pirate Enemy; if you fail, roll on the Injury Table.				
6	Bureaucracy. You find yourself counting beans for your mining operation. Gain Administration.				
7	Life Event. Roll on the Life Event table.				
8	Drone Operations. You oversee a delicate remote mining operation. Roll Computer 8+ to gain an extra Benefit roll.				
9	Strike! Miners at your site go on strike. Support the strike and gain a Contact in the union and an Enemy in management. Scab and gain an extra Benefit roll and an Enemy in the union.				
10	Investment. A major bank invests in your mining operation. Roll Admin 8+ to gain an additional Benefit roll.				
11	Cyberterrorism. A terrorist hacker subverts your ship's drones and robots. Throw Gun Combat 8+ or Computer 8+; if you succeed gain a level of Computer; if you fail, roll on the Injury Table.				
12	Advancement. You automatically Advance after discovering a major strike. Gain a free skill level and one rank.				

Colonist:

You packed your bags and made a life on a distant frontier world.

Service Skills		Specialist Skills		Advanced Education	
Survival		Liaison		Science	
Repair		Melee Combat		Medicine	
Jack of all Trades		Grav Vehicles		Computer	
Animals		Gun Combat		Admin	
Driving		Leadership		Aircraft	
Carousing		Recon		Watercraft	
Rank	Title	Bonus Skill	Mustering Out Benefits		
0	Citizen		1D6	Cash	Materials
1	District Leader		1	1,000	Low Passage
2	District Delegate	Admin-1	2	5,000	+1 INT
3	Council Advisor		3	5,000	Weapon
4	Councilor	Liaison-1	4	5,000	Mid Passage
5	Lieutenant Governor		5	10,000	Contact
6	Governor		6	20,000	High Passage
2D	Colonist Event				
2	Injury. Roll on the Injury table, but you are not ejected from your career.				
3	Friends in High Places. You befriend a senior corporate or government official. Gain them as a Contact.				
4	Xenomorphs! Deadly organisms infiltrate your colony; carnage ensues. Throw Gun Combat 8+ or Science 8+ to avoid Injury; if you succeed, gain a level in Survival.				
5	Crime. You have a chance to get involved in a criminal gang. Avoid this opportunity and gain its leader as an Enemy. Join in, and throw Administration 8+, Stealth 8+, or Streetwise 8+; on success, you gain an extra benefit roll; on failure, you go to Prison.				
6	Growth. Your colony thrives. Gain DM+2 to one of your Benefit rolls.				
7	Life Event. Roll on the Life Event table.				
8	Hard Work. You work hard at your job. Gain either Administration, Computer, or Repair.				
9	Colonial Strife. Social strife on your colony explodes into bloodshed. Join the rebels and gain Gun Combat or Demolitions but you must throw Gun Combat 8+ to avoid an Injury Table roll. Stay away from violence and avoid risk to life and limb, but you gain no skill.				
10	Industrial Accident. Faulty safety measures result in a major disaster at your colony. Roll Repair 8+ or Science 8+. If you succeed, gain a Contact in the colonial administration. If you fail, lose one Benefit.				
11	Underground Politics. You encounter an illegal political movement. Turn them in to gain a Benefit roll and gain their escaped leader as an Enemy. Join, and throw Demolitions 8+. Stealth 8+ or Streetwise 8+; if you succeed, gain the movement's leader as a Contact; if you fail, go to Prison.				
12	Advancement. Your hard work has been recognized. You gain one rank and one free skill level.				

Elite:

You were a member of the upper crust of society, a diplomat, or a junior executive.

Service Skills		Specialist Skills		Advanced Education	
Admin		Leadership		Medicine	
Liaison		Melee Combat		Sciences	
Carousing		Athletics		Aircraft	
Computer		Steward		Animals	
Grav Vehicles		Watercraft		Piloting	
Deception		Streetwise		Computer	
Rank	Title	Bonus Skill	Mustering Out Benefits		
0	Analyst		1D6	Cash	Materials
1	Supervisor		1	2,000	Contact
2	Manager		2	10,000	+1 EDU
3	Director		3	20,000	+1 SOC
4	Managing Director	Admin-1	4	40,000	High Passage
5	Vice President		5	50,000	Yacht
6	President		6	100,000	Explorer's Society
2D	Elite Event				
2	Injury. Roll on the Injury table, but you are not ejected from your career.				
3	Celebrity Status. You are part of your homeworld's celebrity circles. Gain one level of Carousing, Liaison, or Steward.				
4	Cybered! Your patrons (or parents) pay for advanced cybernetic implants. Gain Cr10,000 worth of cybernetics.				
5	Inheritance. You inherit a gift from a rich relative. Gain an extra Benefit roll.				
6	Conspiracy. You are invited to join a conspiracy against the locally dominant corporation. If you refuse the offer, gain an Enemy. If you accept the offer, throw Deception 8+ or Liaison 8+. If you succeed, gain one of Carousing, Liaison, or Deception. If you fail, throw Admin 10+ to avoid spending a term in Prison.				
7	Life Event. Roll on the Life Event table.				
8	Corporate Infighting. You can criticize, or even bring down, a questionable corporate executive. If you refuse and support the exec, gain both a Contact and an Enemy. If you attempt to discredit the exec, roll Liaison 8+ or SOC 8+. If you succeed, gain their primary rival as a Contact. If you fail, reduce SOC by 1.				
9	Acclaimed Leadership. Your directorship is acclaimed by all as being fair and wise. Gain either a jealous rival or an unhappy subordinate as an Enemy but also gain a DM+2 on your next Benefit throw.				
10	Interstellar Tour. You go on a tour, visiting several different worlds. Gain Piloting, Animals, or Zero-G.				
11	Alliance. You make an alliance with a powerful and charismatic member of the government. Gain a Contact and either a level of Leadership or a DM+4 on your next Benefit throw.				
12	Advancement. Your high-level dealings have been very successful. You gain a rank, and a free skill level.				

Star Trooper:

You were a member of spacefaring infantry, specializing in boarding actions and planetary assault.

Service Skills		Specialist Skills		Advanced Education	
Gun Combat		Carousing		Survival	
Heavy Weapon		Repair		Admin	
Athletics		Demolitions		Computer	
Gunnery		Recon		Piloting	
Melee Combat		Tactics		Medicine	
Zero-G		Stealth		Engineering	
Rank	Title	Bonus Skill	Mustering Out Benefits		
0	Trooper		1D6	Cash	Materials
1	Lieutenant	Leadership-1	1	1,000	+1 EDU
2	Captain		2	5,000	Weapon
3	Major	Tactics-1	3	5,000	Mid Passage
4	Lt. Colonel		4	10,000	+1 SOC
5	Colonel		5	20,000	High Passage
6	Brigadier		6	50,000	Explorer’s Society
2D	Star Trooper Event				
2	Injury. Roll on the Injury table, but you are not ejected from your career.				
3	Special Forces. You receive special forces training. Throw END 8+. If you succeed, gain Computers, Demolitions, or Recon. If you fail, you suffer DM-1 to one Benefit roll.				
4	Advanced Training. You receive advanced training. Throw EDU 8+. If you succeed, increase any skill you already have by one.				
5	Cybered! The Corps pays for advanced cybernetic implants. Gain Cr10,000 worth of cybernetics.				
6	Counterterrorism. Your unit responds to a terrorist attack. Throw Gun Combat 8+ or Stealth 8+; on success, gain DM+4 to your next Benefit throw; on failure, roll on the Injury Table.				
7	Life Event. Roll on the Life Event table.				
8	Bug Hunt! You fight hostile xenofauna. Throw Gun Combat 8+; if you succeed, gain Animals or Survival. If you fail, roll on the Injury Table.				
9	Labor Dispute. Your employers send your unit to suppress striking workers or civilian protesters. Try to avoid bloodshed and give up your after-action bonus but gain the union leader as a Contact; go in with guns blazing and gain another Benefit roll from the after-action bonus, but also an escaped union leader as an Enemy.				
10	Boarding Action. You are involved in a violent boarding action in space. Throw Melee Combat 8+ or Gun Combat 8+. If you succeed, gain either Zero-G, Tactics, or Leadership. If you fail, roll on the Injury table.				
11	Political Ally. Your commanding officer takes a professional interest in you. Gain a DM+2 to one Benefit roll due to their influence. Gain a Contact.				
12	Advancement. Your heroic service is recognized. You gain a rank and a free skill level.				

Merchant:

You were an independent spacefaring trader or worked for an interstellar corporation.

Service Skills: Pick 1 at level 1			Specialist Skills		Advanced Education
Steward			Gun Combat		Medicine
Repair			Melee Combat		Science
Liaison			Pilot		Survival
Carousing			Gunnery		Grav Vehicles
Admin			Streetwise		Engineering
Zero-G			Stealth		Computers
Rank	Title	Bonus Skill	Mustering Out Benefits		
0	Crewmember		1D6	Cash	Materials
1	Deck Cadet	Leadership-1	1	2,000	Low Passage
2	Fourth Officer		2	10,000	+1 EDU
3	Third Officer		3	20,000	Weapon
4	Second Officer	Pilot-1	4	30,000	Contact
5	First Officer		5	40,000	High Passage
6	Captain		6	50,000	Free Trader

2D Merchant Event

2	Injury. Roll on the Injury table, but you are not ejected from your career.
3	Cybered! A good trade deal or corporate favor earns you Cr6,000 worth of cybernetic implants.
4	Smuggler. You are offered the opportunity to smuggle illicit items. If you accept, throw Admin 8+ or Streetwise 8+. If you succeed, gain a level of the skill you rolled and an extra Benefit roll. If you fail, gain an Enemy.
5	Risky Business. You have a chance to risk your fortune on the possibility of a lucrative deal. You may risk as many Benefit rolls as you have. Throw Admin 8+ or Streetwise 8+. If you succeed, you gain half as many additional Benefits as your risked, rounded up. If you fail, you lose the Benefits you risked. Either way, gain a level of the skill that you rolled.
6	Good Deal. You make a good deal on some merchandise. Gain a +1 DM on a Benefit roll.
7	Life Event. Roll on the Life Event table.
8	Legal Trouble. You are caught up in a legal battle. Throw Admin 8+. If you succeed, gain one of Admin, or Liaison. If you fail, you must spend next term in Prison.
9	Advanced Training. You receive advanced training. Throw EDU 8+. If you succeed, gain a level of Admin, Engineering, Computer, Piloting, or Zero-G.
10	Pirate Raid. Pirates or privateers attack your ship. Throw Gun Combat 8+, Gunnery 8+ or Dexterity 10+. If you fail, roll on the Injury table. If you succeed, gain another Benefit.
11	Xenomorphs! You encounter deadly planetary, or space born organisms. Throw Gun Combat 8+ or Melee Combat 8+ to avoid Injury. If you succeed, gain a level in Survival.
12	Advancement. Your wheeling and dealing pay off big-time. You gain a rank, and a free skill level.

Fleet:

You were a member of an interstellar space fleet.

Service Skills			Specialist Skills		Advanced Education
Zero-G			Piloting		Science
Repair			Carousing		Admin
Computers			Melee Combat		Medicine
Gunnery			Leadership		Tactics
Gun Combat			Engineering		Jack of All Trades
Athletics			Survival		Liaison
Rank	Title	Bonus Skill	Mustering Out Benefits		
0	Starhand		1D6	Cash	Materials
1	Ensign	Leadership-1	1	1,000	Low Passage
2	Lieutenant		2	5,000	+1 EDU
3	Lt. Commander	Tactics-1	3	5,000	Weapon
4	Commander		4	10,000	Mid Passage
5	Captain		5	20,000	+1 SOC
6	Commodore	SOC+1	6	50,000	High Passage
2D	Fleet Event				
2	Injury. Roll on the Injury table, but you are not ejected from your career.				
3	Gambling Ring. You join a gambling ring aboard your ship during your down time. If you wish, you may risk a Benefit roll. Throw Carousing or Streetwise 8+. If you succeed, gain an additional Benefit roll. If you fail, lose a Benefit roll.				
4	Cybered! The Fleet pays for advanced cybernetic implants. Gain Cr10,000 worth of cybernetics.				
5	Ship Destroyed. Your ship suffers severe damage in battle. You may attempt to save some of your shipmates, risking your own life. If you choose to try to save them, throw DEX 8+ or Repair 8+. If you succeed, gain a Contact among the crew members you saved and DM+2 on a Benefit throw. If you fail, roll on the Injury table. If you choose to only save yourself, you escape unarmed but with no benefits.				
6	Advanced Training. You receive advanced training in a specialist field. Throw EDU 8+ to gain one level of any skill you already have.				
7	Life Event. Roll on the Life Event table.				
8	Fleet Battle. Your ship participates in a fleet battle against raiders or a rival fleet. Throw Gunnery 8+ or Piloting 8+; succeed, and gain one of Computer, Gunnery, Engineering or Piloting; fail, and roll on the Injury Table.				
9	Mutiny. You foil an attempted mutiny on your ship. Gain an Enemy among the escaped mutineers, but also a +2 DM on one Benefit roll.				
10	Xenomorphs! Deadly organisms infiltrate your ship. Throw Gun Combat 8+ or Melee Combat 8+ to avoid Injury. If you succeed, gain a level in Zero-G.				
11	Electronic Warfare. You train in advanced inter-ship cyber-warfare techniques. Gain a level in Computer.				
12	Advancement. Your exemplary service has gained you a promotion. You gain a rank, and one free skill level.				

Pirate:

You were a space outlaw, a crew member of a pirate ship.

Service Skills			Specialist Skills		Advanced Education
Streetwise			Deception		Liaison
Repair			Carousing		Engineering
Gun Combat			Piloting		Jack of All Trades
Melee Combat			Tactics		Computer
Zero-G			Demolitions		Medicine
Recon			Gunnery		Admin
Rank	Title	Bonus Skill	Mustering Out Benefits		
0	Crewmember		1D6	Cash	Materials
1	Midshipman		1	1,000	+1 INT
2	Lieutenant	Pilot-1	2	5,000	Weapon
3	Lt. Commander		3	10,000	High Passage
4	Commander		4	20,000	+1 SOC
5	Captain	Leadership-1	5	40,000	High Passage
6	Dread Pirate		6	80,000	Corsair
2D	Pirate Event				
2	Injury. Roll on the Injury table, but you are not ejected from your career.				
3	Gambling Ring. You join a gambling ring aboard your ship during your down time. If you wish, you may risk a Benefit roll. Throw Carousing or Streetwise 8+. If you succeed, gain an additional Benefit roll. If you fail, lose the Benefit roll you risked.				
4	Smuggling. Pirates often dabble in smuggling, and such an opportunity arises. Throw Deception 8+, or Streetwise 8+; if you succeed, gain an extra benefit. If you fail, go to Prison.				
5	Cybered! Your bosses pay for advanced cybernetic implants. Gain Cr6,000 worth of cybernetics.				
6	Colonial Raid. You raid a frontier colony. Throw Recon 8+ or Liaison 8+ to locate good loot; if you succeed, gain an extra benefit.				
7	Life Event. Roll on the Life Event table.				
8	Prize Catch. You board a merchant vessel. Throw Zero-G 8+ or Gun Combat 8+; if you succeed gain and extra Benefit roll; if you fail, roll on the Injury Table.				
9	Fleet Battle. Your ship participates in a fleet battle against a governmental fleet, corporate forces, or rival corsairs. Throw Gunnery 8+ or Piloting 8+; succeed, and gain one of Computer, Gunnery, Engineering or Piloting; fail, and roll on the Injury Table.				
10	Yarr! You befriend a famous pirate. Gain them as a Contact.				
11	Stranded! Your ship crash-lands and you are stranded on a marginally habitable far-frontier world. Throw END 8+; if you succeed, gain a level in Survival; if you fail, roll on the Injury Table.				
12	Advancement. You are quickly becoming a legend among pirates. You gain a rank, and a free skill level.				

Rogue:

You were a criminal, drifter, or other ne'er do-well.

Service Skills			Specialist Skills		Advanced Education
Streetwise			Melee Combat		Survival
Recon			Liaison		Jack of All Trades
Gun Combat			Athletics		Engineering
Deception			Liaison		Medicine
Stealth			Admin		Tactics
Carousing			Repair		Computers
Rank	Title	Bonus Skill	Mustering Out Benefits		
0	Independent		1D6	Cash	Materials
1	Associate		1	1,000	Low Passage
2	Made Soldier	Gun Combat-1	2	5,000	+1 INT
3	Lieutenant		3	5,000	Weapon
4	Underboss		4	10,000	Contact
5	Consigliere		5	20,000	Weapon
6	Boss		6	30,000	Mid Passage

2D Rogue Event

2	Injury. Roll on the Injury table, but you are not ejected from your career.
3	Rat! You have an opportunity to inform on a rival criminal. Betray them to the authorities and gain an extra Benefit roll but receive them as an Enemy; keep your mouth shut, and the rivalry is over - receive them as a Contact.
4	Cybered! Your boss pays for advanced cybernetic implants. Gain Cr6,000 worth of cybernetics.
5	Look at You, Hacker! You engage in cybercrime. Throw Computer 8+; if you succeed, gain an additional Benefit throw. If you fail, go to Prison.
6	Caught! You may try to defend yourself; throw Admin 8+ to avoid going to Prison. Alternatively, you may hire a hotshot lawyer to defend you; lose one Benefit but gain the lawyer as a Contact.
7	Life Event. Roll on the Life Event table.
8	Heist! You participate in a high-stakes criminal operation. Throw Computer 8+, Stealth 8+, or Streetwise 8+; if you succeed, gain an extra Benefit throw. If you fail, go to Prison.
9	Gang War! You become involved in a feud between gangs. Throw Gun Combat 8+ or Melee Combat 8+; if you succeed, gain a level in Streetwise; if you fail, roll on the Injury Table. You gain an Enemy in the rival gang in any case.
10	Gambling Ring. You join a gambling ring – or even organize one. If you wish, you may risk a Benefit roll. Throw Carousing or Streetwise 8+. If you succeed, gain an additional Benefit roll. If you fail, lose the Benefit roll you risked.
11	Mentor. You befriend a boss of a famous criminal gang. Gain them as a Contact.
12	Advancement. Crime really does pay. Gain a rank, and a free skill level.

Scholar:

You were a scientist, doctor, or researcher.

Service Skills			Specialist Skills		Advanced Education
Admin			Survival		Pilot
Computer			Repair		Zero-G
Medicine			Carousing		Animals
Liaison			Engineering		Recon
Investigation			Jack of All Trades		Athletics
Science			Medicine		Leadership
Rank	Title	Bonus Skill	Mustering Out Benefits		
0	Student		1D6	Cash	Materials
1	Researcher		1	1,000	Contact
2	Research Adjunct		2	5,000	+1 EDU
3	Assistant Professor	Liaison-1	3	10,000	+1 INT
4	Associate Professor		4	20,000	Mid Passage
5	Professor		5	20,000	+1 SOC
6	Distinguished Prof		6	50,000	Research Vessel
2D	Scholar Event				
2	Injury. Roll on the Injury table, but you are not ejected from your career.				
3	Cybered! Your academic institute pays for advanced cybernetic implants. Gain Cr6,000 worth of cybernetics.				
4	Breakthrough! You make a breakthrough in your research. Gain DM+2 to one Benefit roll.				
5	Field Work. You conduct your research on the far frontier. Gain a level in Survival or Repair.				
6	Immoral Research. You are offered an opportunity to engage in immoral, potentially illegal, research. Accept, and gain a level in Science, Deception, or Medicine; refuse, and you do not receive this skill; blow the whistle and gain the project lead as an Enemy.				
7	Life Event. Roll on the Life Event table.				
8	Confidential Project. You work on a secret project for a powerful organization. Keep your mouth shut and gain a level in Science, Liaison, or Medicine. Sell the results to a rival company and gain an extra Benefit roll but the organization as your Enemy.				
9	Plagiarism. You have an opportunity to steal another scholar's work. Exploit it, and receive an extra Benefit roll, but gain your victim as an Enemy; avoid the temptation, and you gain nothing but integrity.				
10	Talent Grab. A rival organization decides to kidnap you and force you to work for them. Try to escape and throw DEX 8+ to avoid Injury; jump ship and gain an extra Benefit roll from your new employer but gain your former employer as an Enemy.				
11	Mentor. You work with a prominent and famous academic in your field. Gain them as a Contact.				
12	Advancement. Your research has been phenomenally successful. Gain a rank, and a free skill level.				

Scout:

You were an intrepid explorer, surveyor, or courier

Service Skills			Specialist Skills		Advanced Education
Piloting			Gunnery		Admin
Repair			Athletics		Grav Vehicles
Computer			Recon		Medicine
Gun Combat			Science		Tactics
Zero-G			Investigation		Engineering
Survival			Stealth		Jack of All Trades
Rank	Title	Skill	Mustering Out Benefits		
0	Scout		1D6	Cash	Materials
1	Master Scout		1	1,000	Low Passage
2	Chief Scout		2	5,000	+1 INT
3	Master Chief Scout	Science-1	3	10,000	Weapon
4	Senior Scout		4	10,000	Mid Passage
5	Group Leader		5	20,000	Space suit
6	Sector Leader		6	50,000	Scout Ship
2D	Scout Event				
2	Injury. Roll on the Injury table, but you are not ejected from your career.				
3	Ambushed. A rival corporate or pirate vessel ambushes your ship. If you choose to run, throw Piloting 8+ to escape; if you fail, roll on the Injury table. If you choose to fight, throw Gunnery 8+; If you succeed, gain a DM+1 on one Benefit roll; if you fail, roll on the Injury table.				
4	Cybered! Your employers pay for advanced cybernetic implants. Gain Cr6,000 worth of cybernetics.				
5	Survey Duty. You survey an alien world. Gain one of Animals, Admin, or Science.				
6	Exemplary Service. You perform a great, but secret, service to the Scout Bureau or a corporation. Gain DM+1 on one Benefit roll.				
7	Deep Space Travel. You spend several years jumping from world to world. Gain one of Engineering, Computer, Piloting, or Zero-G.				
8	Life Event. Roll on the Life Event table.				
9	Rescue Mission. Your ship is the first vessel on the scene of a disaster. Throw Engineering 8+ or Medicine 8+. If you succeed, gain a level in the skill you tested and a Contact. If you fail, gain an Enemy.				
10	Xenomorphs! You encounter deadly planetary organisms. Throw Gun Combat 8+ or Melee Combat 8+ to avoid Injury. If you succeed, gain a level in Survival.				
11	Courier Duty. You serve as a courier for important messages for a corporation or the Scout Bureau. Gain either Liaison, Steward, or a high-ranking Contact in a megacorp.				
12	Bonanza! You spend time on the fringes of known space and discover a new world or unsanctioned colony of great worth. Gain an extra Benefit roll and one free skill level.				

Life Events

Roll on the following table if you roll a Life Event on the Event tables above.

2D	Life Event
2	Sickness or Injury. You suffer an injury or illness. Roll on the Injury table.
3	Birth or Death. Someone close to the character dies or is born.
4	Good Fortune. Something good happens to you. Gain DM+1 on one Cash Benefit roll.
5	Ending of Relationship. A romantic relationship or important friendship ends – badly. Change a Contact into an Enemy. If you do not have a Contact, you still gain an Enemy.
6	Improved Relationship. A romantic or friendly relationship deepens, possibly leading to marriage or a lasting friendship. Change an Enemy into a Contact. If you don't have an Enemy, gain a Contact.
7	New Relationship. You become involved in a romantic relationship.
8	Travel. You spend a lot of time travelling between worlds. Gain either Steward-1 or Carousing-1.
9	Study. You work to improve yourself. Gain +1 to EDU.
10	Crime. You commit, or are accused of committing, a crime. Lose one Benefit roll. Throw Admin 8+. If you fail, you must spend the next Term in Prison.
11	Cybersurgery. You undergo surgery to install commonplace cybernetics. Gain any implants with a total cost of Cr5000.
12	Unusual Event. Something strange or unusual happens to you. Roll 1D: <ol style="list-style-type: none">1. Missing Time. For an unknown reason, there is a period of 3D days you cannot remember.2. Inheritance. Gain an additional roll on the Material or Cash Benefit table.3. Trait. Gain a free Trait.4. Underworld Contacts. You join a gang or acquaint yourself with criminal figures. Gain a senior criminal Contact.5. Contact with Government or Corporations. You briefly encounter a senior government or corporate VIP. Gain them as a Contact.6. Alien Artifact. You somehow find an alien artifact. Its nature is up to the Referee.

Mustering Out Benefits

Characters may gain cash or material benefits from Mustering Out. Roll on the Material or Cash Benefit tables on the appropriate career table.

Cash benefits can be spent on equipment, weaponry, trade goods for speculative trade, or saved for later. **Characters with the Carouse skill** may throw Carouse/SOC 10+ to gain a DM+1 on a given Cash Benefit Table roll. If they fail, they get a DM-1 to the roll instead. Penalties or bonuses to the Mustering Out Benefit rolls can never raise the result over 6 or lower it below 1.

Characters may gain one or more of the following material benefits:

- **Contact:** gain an important and useful relationship with a person or group who can provide you with significant favors: an arms dealer might provide otherwise unobtainable gear, while a corporate exec could serve as a patron and supply highly useful information on the corporate world. Contacts typically stay on one world, but some do move around. Abusing contacts and not reciprocating the positive relationship can lead to the loss of the contact. Note that characters with a positive SOC DM gain a number of free contacts equal to that DM.
- **Corsair:** gain a [300-ton pirate Corsair](#). The ship belongs to a pirate boss or gang; you owe them big time for the use of the ship, and they *will* request favors from time to time. You pay for all regular operating costs and owe half the profits from your piracy to the boss or gang.
- **Free trader:** gain a [150-ton Free trader](#) ship. The character must make mortgage payments of Cr101,000 a month for the next forty years. Each additional time you receive this benefit reduces this by ten years; receive it four times, and you don't have to pay a mortgage.
- **Explorer's Society:** Become a member of the exclusive Explorer's Society. Membership grants a free high-passage ticket for one parsec every two months and free stay at Society hostels in most starports.
- **Passage:** Gain a single ticket of the type named (low, middle, high) for travelling one jump (up to two parsecs) on a starship.
- **Prospector:** Gain partial ownership in a [100-ton Prospector](#) – typically subsidized by the government or handed down due to military or commercial arrangements. You must pay operating expenses and maintenance. You don't owe any payments for the ship, but its 1D decades old and requires Cr100,000 to 600,000 in repairs that must be paid in monthly payments over a period of 3 years.
- **Research Vessel:** gain a [200-ton Research Vessel](#). The ship belongs to a research institute and the character pays for regular operating expenses, except for annual maintenance. The research institute has a right to veto certain activities and missions that the character might undertake—often, the research institute will insist on an NPC minder to be part of the crew. The institute's leadership may also require that the scholar undertake missions for them from time to time.
- **Scout Ship:** gain a [100-ton Frontier Courier](#) Ship. The Scout Service still owns the ship but makes it available to you on reserve basis. You gain free maintenance and refueling for the vessel at Scout bases. Expect the Scout Service to have missions for you from time to time.
- **Weapon:** Gain any non-heavy personal weapon or weapons (the Referee determines the TL). The weapon or weapons may be worth up to Cr1,000 in value including ammunition. Multiple benefits of this kind allow either multiple weapons or a more expensive weapon. Weapon modifications are included in this budget as well. Alternatively, the character may opt to take personal armor, or, at the Referee's discretion, cybernetics, under the same restrictions, customized as desired by the character under the given budget
- **Space Suit:** the character receives a standard issue space suit. Multiple benefits of this kind allow the character to upgrade to a Hostile Environment Space Suit, or an Advanced Space Suit, their choice.
- **Yacht:** gain the use of a [100-ton yacht](#) from a government or corporation. You are responsible for all costs and maintenance and owe favors to said government or corporation. They will call in those favors in from time to time.

Retirement Pay

Characters who retire after 5 terms (age 38) or more receive an annual retirement pay. The base pay at 5 terms is Cr10000 a year; each additional term served in that career adds Cr2000 per year.

Aging

Characters must make aging rolls beginning at the age of 42, or at the end of 6 terms, if rolling for term length. At the end of the 6th term, and on the end of each subsequent term, throw 2D on the following table. The character's total number of terms serves as a negative DM to the throw. The Referee might add DM+2 for characters living in technologically advanced societies with good health care (see below).

2D	Effect of Aging
-6	Reduce three physical characteristics by 2, reduce one mental characteristic by 1
-5	Reduce three physical characteristics by 2.
-4	Reduce two physical characteristics by 2, reduce one physical characteristic by 1
-3	Reduce one physical characteristic by 2, reduce two physical characteristics by 1
-2	Reduce three physical characteristics by 1
-1	Reduce two physical characteristics by 1
0	Reduce one physical characteristic by 1
1+	No effect

Aging Crisis

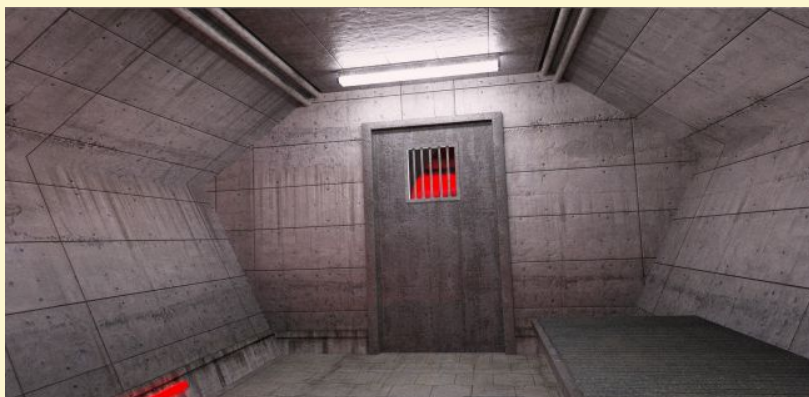
If any characteristic falls to 0 due to aging, the character must throw 6+ to survive. If still alive, they will now have that characteristic at 1, and must retire from their career.

Aging and Technology

Advanced medicine prolongs life and delays aging. At TL8-10, add DM+1 to all aging rolls during character generation. This DM increases to DM+3 at TL11-12, to DM+4 at TL13, DM+5 at TL14 & DM+6 at TL15

Prison

When an Event sends you to prison, you spend one Term as a prisoner. You do not receive a Benefit for this Term; however, you may resume your previous career afterwards. Roll for a prison event:



Prison Event

2D	Prison Event
2	Sickness or Injury. You suffer an injury or illness. Roll on the Injury table.
3	Escape Attempt: you attempt a daring, foolhardy escape! Roll Deception 10+, Stealth 10+ or Admin 10+. If you succeed, you escape, and now enter the Rogue career. If you fail, roll on the Injury table, and spend the next term in Prison!
4	Gang Recruitment: one of the prison gangs attempts to recruit you. Agree, and gain a Contact from the criminals. Refuse and roll Melee Combat 8+; if you succeed, gain a contact in law enforcement. If you fail, roll on the Injury table, and gain a law enforcement contact.
5	Smuggling: you get involved in a lucrative smuggling racket, getting luxuries from outside. Roll Streetwise 8+ to gain one Benefit roll on your career table. Fail, and lose one Benefit roll.
6	Forced Labor: the prison farms you out to local frontier colonists who benefit from your toil. Gain Athletics-1.
7	Cell Mates: you form a solid relationship with a cellmate. Gain a contact.
8	Prison Riot! Bedlam in your cell block! Roll Melee Combat 8+, Stealth 8+, or Liaison 8+ to avoid rolling on the Injury table. Either way, gain a level in the skill you rolled.
9	Study. You work hard in the prison library to improve yourself. Gain +1 to EDU.
10	Assault a Guard: you were provoked! Roll Melee Combat 8+. Succeed, and gain a level of Streetwise and a criminal contact. Fail, and roll on the Injury Table.
11	Experimentation. You are used as a guinea pig for unethical scientific research. Roll END 8+. If you succeed, gain the <i>Hard to Kill</i> trait. If you fail, lose one point of END.
12	Paroled for good behavior! You may select one skill from your eligible career skills and resume your career normally next term.

Injury Rules

You should roll on the following Injury Table whenever an Event result says so. In this case, the character suffers an injury, but may continue their career.

Note that this is the far future; maimed characters can rely on cybernetics and or partial cloning for recovery. Deduct the cost of cybernetics or cloning listed below from the character's starting funds. If the funds run out, and medical debt remains, the character owes money to someone powerful: a government, a corporation, or an organized crime syndicate.

Upon being injured, throw END 6+, note the throw's Effect, and consult the following table.



Injury Table

Effect	Result
-6 or less	The character is nearly killed. Reduce one physical characteristic by 1D, and both other physical characteristics by 2 (or one of them by 4). Roll 1D: 1-2, the character loses a leg; 3-4, the character loses an arm; 5, the character loses an eye; 6, the character loses both eyes.
-5 to -2	Character is severely injured with severe lasting implications. Reduce one physical characteristic by 1D. Roll 1D: 1, character loses a leg; 2, character loses an arm; 3, character loses both eyes; 4-6, the character is otherwise unharmed.
-1 to +0	Character is injured with lasting implications. Roll 1D: 1-2, character loses a hand; 3-4, character loses one eye; 5, character loses an arm; 6, reduce one physical characteristic by 2.
+1 to +5	Character is injured and suffers mild lasting injuries. Roll 1D: 1-2, character is badly scarred; 3-4, character loses 1D fingers; 5, character loses most teeth; 6, reduce one physical characteristic by 1.
+6 or more	Lightly injured. No permanent effects.

DMs: -2 if the character is a Pirate or a Scout; -1 if in a military career; +0 if civilian.

Injury Effects

Below are the effects of injury, followed by a table presenting cybernetic or cloning replacement costs.

Blinded: The character loses both eyes to injury and is blind and may not perform any task requiring sight.

Lost Arm: One of the character's arms must be amputated to save their life. The character obviously cannot use this arm for any purpose.

Lost Fingers: The character loses several fingers to injury. He or she suffers from DM-2 to all checks related to that specific hand.

Lost Hand: One of the character's hands must be amputated as part of medical care, though surgery saves most of the arm. The character loses all uses of the hand.

Lost Leg: One of the character's legs must be amputated to save his or her life. The character cannot move unaided other than by crawling. Using a crutch or a wheelchair, the character may move 3 meters per minor action.

Lost One Eye: The character is blinded in one eye but retains the other, losing depth perception and drastically reducing their field of view. The character retains vision but suffers DM-2 to all actions requiring depth perception, such as ranged attacks. The penalty should also be applied to any check related to having a full field of vision, such as noticing someone sneaking up on the character.

Lost Teeth: Most of the characters' teeth are knocked out, making eating difficult causing DM-2 to all checks involving speech.

Physical Characteristic: The character's characteristics are reduced due to lingering physiological, neurological, and psychological damage. Adjust attribute DMs accordingly.

Scarring: The character suffers extensive and lasting scars or burn marks from his or her injury. The character is easily recognizable and suffers DM-2 to all social checks, except for intimidation in which they enjoy DM+2.

Repairing Injuries

Thankfully, advanced cybernetics and cloning allow the restoration of even the worst injuries. The following table presents corrective surgery and cybernetic options, along with their minimum tech levels and Cybernetic Points cost. See the Cybernetics section in the Equipment chapter for more information on cybernetics and Cybernetic Points. If using cloning double credit cost.

Corrective Cybernetics

Injury	Implant or Cloning	TL	Cost (Cr)	Cybernetic Points
Blindness	Pair of Cybereyes	9	10,000	2
Lost arm	Cyberarm	9	6,000	1
Lost fingers	Cyberfingers	9	500 each	0
Lost hand	Cyberhand	9	1,500	1
Lost leg	Cyberleg	9	9,000	1
Lost one eye	Cybereye	9	5,000	1
Lost teeth	Dental reconstruction	6	2,500	0
Physical Characteristic	Cloning or internal cybernetics	9	3,000/point	1/injury
Scarring	Plastic surgery	7	3,000	0

Step 4: Calculate Stamina and Lifeblood

The character's Stamina represents their toughness, and their ability to take a hit and shrug it off. Stamina is equal to the sum of character's END Characteristic + Athletics skill. For example, a character with END 7 and Athletics 1 will have Stamina 8.

The character's Lifeblood represents their resistance to injury. It is equal to twice the sum of the character's END Characteristic and Athletics skill. For example, a character with END 7 and Athletics 1 will have Lifeblood 16.

If the character lacks the Athletics skill, their Stamina simply equals their END score, and their Lifeblood simply equals twice their END score.

Step 5: Finalize the Character

Think of your characteristics character's skills, career, and events. What kind of person are they? Why did they gain a level in Carouse when they should have focused on their careers and gained that level in Admin instead? What happened during their career that made them want to seek a life out in the stars? Perhaps look at the character's career and create a narrative sketch of what their life was like. What does the character look like? How are they connected to the other Player Characters? Think of your character's personality and motivation and give them a name.

Traits

Traits are unique features of competent and driven characters, such as player characters. Each character typically has one Trait, though, rarely, particularly experienced and determined characters may have two or even three Traits. Each Trait has a simple Prerequisite, and an effect, which often utilizes an Advantage throw – in which you throw 3D and pick the highest 2 for the throw result.

Skill-Related Traits

Acrobat

Prerequisite: Athletics 2

Roll with Advantage whenever the character performs high-flying feats of athletics: swinging from ropes, running (not walking) across wires, or leaping from rooftop to rooftop.

Animal Affinity

Prerequisite: None

Roll with Advantage whenever the character has to interact with animals. The character can opt to have a small pet that understands basic commands.

Awareness

Prerequisite: INT 9+

The character has sharp senses and is difficult to surprise. When rolling the Recon skill to avoid surprise (even unskilled), the character throws with Advantage. Note that this does not work when the character is setting up a deliberate ambush; the Hunter Trait covers that instead.

Born Athlete

Prerequisite: None

The character is a natural talent. Choose one physical attribute. Make all Athletics tests with that attribute with Advantage.

Combat Medic

Prerequisite: Medicine 1

The character is trained in combat medicine and capable of bringing wounded comrades back to fighting condition. As an action in combat, the combat medic may throw Medicine 6+ to immediately revive an unconscious character with Minor Wounds. The revived character will still be wounded, as usual for an awakened character with Minor Wounds, and will be prone, but will be able to act in the following combat round

Explosive Expert

Prerequisite: Demolitions 1

The character knows how to effectively set up, or throw, explosives and grenades. Add 1D to the damage of all explosives and grenades used by the character.

Ghost

Prerequisite: Stealth 1

The character is an expert in using one specific terrain type to their advantage. When sneaking in that terrain condition, they throw with Advantage. The possible terrain types might include Forest, Jungle, Urban, Desert, Shipboard, Swamp, etc. The terrain should be quite specific.

Hacker

Prerequisite: Computer 1

The character is an accomplished hacker who dares to challenge even the most perfect, immortal machine. When trying to break into a secure computer system or when picking an electronic lock (or similar device), the hacker throws with Advantage.

Hunter

Prerequisite: Recon 1

The character is an expert in ambushing prey, both animal and sentient. When making a Surprise throw when attempting an ambush, the hunter throws with Advantage.

Juice

Prerequisite: Repair 1 or Engineering 1

Once per session you can push a piece of tech to exceed one of its performance boundaries. For example, sensors or weapons get an extra step of distance to their range; you may reroll a weapon's damage dice and take the better result; you get a second attempt to open a lock with your tools.

Legal Eagle

Prerequisite: Admin 1

The character is well-versed in legal codes and can quote appropriate legislation and civil regulations. The character throws Admin with Advantage when dealing with legal matters and procedures.

MacGyver

Prerequisite: Jack-o-Trades 1

Once per session you can spend 1d3×10 minutes to create 1D4 tools or weapons the baseline tech level of the planet or place you find yourself in.

Master Tracker

Prerequisite: Survival 1

This character gains Advantage when tracking in a wilderness environment. This trait does not apply in urban or other built-up areas.

Merchant

Prerequisite: Liaison 1

When haggling over prices, roll with Advantage. This Trait applies to the Speculative Trade table roll as well.

Palmgreaser

Prerequisite: Admin 1

The character is able to spot a corrupt official a kilometer away and knows how to offer a bribe discreetly and inoffensively. Admin tasks when bribes are used are rolled with Advantage.

Parkour

Prerequisite: Athletics 1

The character is very adept at bypassing or avoiding obstacles while running at top speeds. All Athletics tests made during chases, as either pursuer or quarry, are made with Advantage.

Proper Etiquette

Prerequisite: Liaison 1

The character knows the intricacies and rules of very formal social settings, such as Diplomatic Meetings, High Level Business Dealings, and the like. The character gains Advantage on tests made when operating under very formal social rules.

Rescue Specialist

Prerequisite: Zero-G 1

The character is good at getting at people who are in danger while in zero gravity conditions. Gain Advantage when rolling to avoid damage in space suits during rescue operations, or to help a victim of a space-disaster get medical attention.

Runner

Prerequisite: Athletics 1.

The character walks and runs very quickly. The character's movement rate is increased by 1D meters per combat action.

Scientist

Prerequisite: Science 1

The character is an expert in a specific field of science. Pick one field of science: Life Sciences, Physical Sciences, Social Sciences, or Space Sciences. When making a throw related to that science, the scientist throws with Advantage. You may choose this Trait multiple times, each time gaining expertise in a different field of science.

Sleight of Hand

Prerequisite: Deception 1

The character is a practiced expert at magic tricks, palming, and legerdemain misdirection. When using the Deception skill in this manner, roll with Advantage.

Smuggler

Prerequisite: Streetwise 1

The character is an expert in trafficking illicit goods. When throwing below the world's law level to avoid customs harassment, the smuggler throws 3D and picks the lowest two.

Furthermore, when trading in illegal goods, the smuggler throws with Advantage on the modified price table and picks the most beneficial dice (the lowest two when buying and the highest two when selling).

Surgeon

Prerequisite: Medicine 1

The character is a specialized surgeon. When treating a seriously wounded character, the surgeon may throw Medicine 6+ to reduce recovery time from 5D days to 2D days. If using the **Trauma Surgery** rules, the surgeon throws with Advantage when throwing for such a surgery.

Thief

Prerequisite: Deception 1 or Streetwise 1

The character is specialized in stealing goods, then selling them on the black market. When pick-pocketing or stealing and item, or when attempting to sell stolen goods, the thief throws with Advantage.

Throwing Arm

Prerequisite: STR 9+

The character is especially adept at throwing grenades and other thrown weapons. Effective range for the character's grenades and other thrown weapons becomes STRx2, and maximum range becomes STRx3.

Tradecraft

Prerequisite: Investigation 1 or Streetwise 1

The character is skilled in surveillance and counter-surveillance techniques, tailing targets, setting up dead drops, and ensuring that they are not being spied upon. When using Investigation or Streetwise in this manner, roll with Advantage.

Combat Traits

Gun Combat Traits

Crack Shot

Prerequisite: Gun Combat 2, one other Gun Combat Trait

Pick one type of firearm category: semi-automatic pistols, revolvers, etc., and gain a +1D damage bonus when using them.

Defeat Armor

Prerequisite: Gun Combat 1

The character knows how to pick weak spots in the enemy's armor from a distance. When firing an aimed shot, if the to-hit throw's Effect is +6 or better, ignore the target's armor.

Gunslinger

Prerequisite: Gun Combat 2

The character is a master of handguns and can perform amazing feats of arms with them. When a shot fired by the character from a semiautomatic handgun "drops" an enemy (causes them to fall unconscious or die), the character may immediately attack a second enemy with the same handgun. The character can only attack one additional enemy per combat round. This is cumulative with the Double Tap weapon Aspect.

Rapid Reaction

Prerequisite: Gun Combat 1

The character has a quick finger on the trigger and reacts quickly to enemy movement. If an Overwatch shot fired by the character hits its target, the character remains in Overwatch and may react one more time in that round to enemy movement. This can be done only once per round (that is, up to two Overwatch shots per round). The Overwatch ends after the second attack.

Signature Weapon

Prerequisite: Gun Combat 1

The character is particularly proficient in using a specific weapon. Choose one *specific* weapon, such as your service revolver, the family hunting rifle, the blaster pistol you pried from that alien's cold, dead hands, etc.; when attacking with *that specific weapon*, the character gains a DM+1 to hit. You may choose this Trait multiple times, each applied to a different weapon. Note that this trait does not apply to a class of weapons (pistols), nor to a model of weapon (Colt .45s), but to a specific weapon the character owns (the custom pearl handled Colt .45 the character's grandfather gave to him upon entering the Star Troopers). If the weapon is lost or destroyed, you can adapt to a new weapon of the same type by training with it for a month. You can always have only one signature weapon at any given time.

Sniper

Prerequisite: Gun Combat 1

The character knows how to kill unsuspecting victims from a distance. When attacking an unaware target at range, using an aimed shot, add 1D to the attack's damage. This bonus can only be applied outside of active combat.

Spray N' Pray

Prerequisite: Gun Combat 1

The character knows how to maximize the effect of automatic fire. When using an automatic weapon, treat its Auto rating as one point higher.

Melee Combat Traits:

Armor Breaker

Prerequisite: Melee Combat 1

The character knows how to hit weak spots in the enemy's armor in melee combat. When attacking in melee, if the to-hit throw's Effect is +6 or better, ignore the target's armor.

Backstab

Prerequisite: Melee Combat 1 and Stealth 1

The character knows how to deliver a lethal blow to an unsuspecting victim. When attacking an unaware target in melee, attack with **Advantage** and add 1D to the attack's damage.

Blind Fighting

Prerequisite: Melee Combat 1

The character knows how to fight in darkness, using senses other than sight. When fighting in melee combat, the character suffers no negative DM to hit for fighting in dim light and only DM-1 for fighting in darkness

Grappler

Prerequisite: Melee Combat 1

The character gains Advantage when attempting to grapple foes.

Martial Artist

Prerequisite: Melee Combat 1

The character is lethal in unarmed combat and can cause serious harm even without possessing significant physical might. When making an unarmed attack, the character's damage increases to 1D+STR DM rather than the regular STR DM.

Signature Weapon

Prerequisite: Melee Weapon 1

The character is particularly proficient in using a specific weapon. Choose one *specific* weapon, such as a family heirloom sword, a dagger won as a war trophy, etc.; when attacking with that *specific* weapon, the character gains DM+1 to hit. You may choose this Trait multiple times, each applied to a different weapon. Note that this trait does not apply to a class of weapons (swords), nor to a model of weapon (long swords), but to a specific weapon the character owns (Excalibur). If the weapon is lost or destroyed, you can adapt to a new weapon of the same type by training with it for a month. You can always have only one signature weapon at any given time.

Legendary Charge

Prerequisite: Melee Combat 1

If you perform a Charge, on a successful hit your attack does double damage.

High Energy Physics

Prerequisite: Gunnery 1

The character is good at putting shots on target. Once per battle, roll damage twice and take the best result.

Weapon Handling

Prerequisite: Heavy Weapons 1

The character proficiently handles heavy weapons despite their bulk. The character suffers no penalty for using Bulky weapons, regardless of STR.

Knows the Terrain

Prerequisite: Tactics 1

The character is an expert in tactical planning and execution in a given environment. Pick a terrain type. Make all tactics throws with Advantage when in that terrain type. The terrain types include, but are not limited to urban, woodlands, jungle, surface navy, submarine, space, etc. The terrain chosen must be specific.

Rally

Prerequisite: Leadership 2

Once per combat, the character can use their action to rally their companions. Allies immediately heal 2d6 Stamina and for the next two rounds NPC allies get Advantage on all Morale tests.

Inspirational

Prerequisite: Leadership 1

The character is a shining example for others and knows how to motivate them. When rolling to Inspire or Support Crew in combat, gain Advantage.

Commander

Prerequisite: Leadership 1

Once per fight as a free action, make a Leadership/SOC 8+ test. You grant an ally who is Nearby to take a free Action.

Berserker

Prerequisite: END 9+

When injured in combat, the character can fly into a blind rage. Assuming the character is conscious, the character may elect to unleash their rage. This grants DM+1 to hit and to damage in melee combat, but also grants the character's enemies DM+1 to hit them. This lasts effect until the end of that particular combat encounter and the character may repeat it in any additional combat encounters in which they suffer new damage.

Shake It Off

Prerequisite: None

Once per combat, you can take no Actions for an entire turn and regain 2d6 Stamina.

Close Quarters Combatant

Prerequisite: Gun Combat 1 and Melee Combat 1

The character does not suffer any penalties when using pistols and other one-handed firearms in melee combat. Two-handed ranged weapons can still only be used as clubs.

Combat Readiness

Prerequisite: DEX 10+

The character is quick to act and react in combat. Gain Advantage to all Initiative throws. If the character does not have the Tactics skill, they still roll Initiative unskilled!

Danger Sense

Prerequisite: INT 9+

The character instinctively senses danger and can try to evade enemy attacks even when generally unaware of the assailant. If you are using the Dodge and Parry optional rules, and the character is attacked by an enemy the character is unaware of, throw DEX 8+; if successful, the character uses the Dodge or Parry bonus despite being unaware of the attacker

Favored Enemy

Prerequisite: None

The character is particularly skilled or vicious when battling one specific enemy. This could be a specific alien life form, robots, soldiers of a given nationality, pirates, or the like. The choice should be broad enough to be applicable, but not too broad as to be abused. The character gains +1D to all damage rolls against this enemy.

Hardy

Prerequisite: None

The character is particularly tough and resistant to injury. Add 5 to Stamina. This trait can be taken multiple times.

Hard to Kill

Prerequisite: None

The character gains 5 additional Lifeblood points. This trait can be taken multiple times.

Low Profile

Prerequisite: DEX 9+

The character knows how to utilize cover very effectively. When the character is behind hard cover, treat that as heavy cover (DM-3 to hit the character).

Vigilant

Prerequisite: INT 9+

The character is always on the move, and on the lookout for trouble. If the character used both actions in a combat round for movement, they automatically enter Overwatch mode without requiring a further action. This Trait is not cumulative with cybernetics or pharmaceuticals providing similar effects or granting additional actions.

Vehicle and Spacecraft Traits

Signature Vehicle

Prerequisite: Relevant Vehicle Skill 1, or Pilot 1

The character gains a DM+1 for all vehicle rolls for a *specific* named vehicle. Note that this trait does not apply to a class of vehicles (for example, “boats” with Watercraft), nor to a specific kind of vehicle (submarines) but to a specific vehicle the character uses (*Red October*).

Jump Intuition

Prerequisite: Pilot 1

The character has a natural – or perhaps supernatural – knack for navigating Jump Space. Roll with Advantage when making a Jump throw.

Ace

Prerequisite: Relevant Vehicle Skill 1, or Pilot 1

The character is a gifted expert at maneuvering with a specific vehicle and can easily outmaneuver others to gain great advantage over them in combat. When throwing for a Position in a vehicle chase or battle using the vehicle skill the Ace trait applies to, throw with 2D and take the higher result. **Note that an Ace in the Pilot skill would not be an Ace Driver, or Ace Grav Pilot.** Each Vehicle skill and the Pilot skill has a separate Ace trait. Being an ace in multiple vehicles requires taking this trait multiple times. **In starships (or other large, crewed vehicles) either the Pilot or Captain’s Ace trait may apply. In small craft, the Pilot must have the Ace trait to gain any benefit.**

Mr. Fix-It

Prerequisite: Repair 1

The character is trained and experienced in performing fast and temporary repairs on vehicles. When throwing to attempt a jury-rig repair on a vehicle system, the mechanic throws with Advantage.

Easy Rider

Prerequisite: Animals 1

The character is well-trained in riding animals, Terran and alien beasts alike. When making a throw related to riding an animal, including when rolling for a Position in a chase, the rider throws 3D and picks the highest two.

Miracle Worker

Prerequisite: Engineering 1

The character is trained and experienced in performing fast and temporary repairs on starships. When throwing to attempt a Damage Control action, the mechanic throws 3D and picks the highest two.

Mask Engine

Prerequisite: Engineering 1

The engineer has developed techniques to make it more difficult to detect the ship. Roll Engineering 10+ and apply the Effect as a penalty for scanning vessels to detect this ship.

Point Defender

Prerequisite: Gunnery 1

The character is very skilled at destroying incoming missiles, and gains a +1DM to all rolls when engaging in the Point Defense Action—thus, the first point defense attempt would be at +1DM, the second at 0DM, the third at -1DM, etc.

Sensor Ace

Prerequisite: Computer 1

When using ship sensors to spoof missiles, jam enemy sensors, or to perform a scan for vessels, roll with Advantage.

Starship

Prerequisite: None.

The character has inherited, won by gambling, loaned, or otherwise received a share in a starship. You may take this Trait multiple times. The first time you take it, you receive a 150-ton Free Trader, a 100-ton mining vessel, a 100-ton Frontier Courier or a 200-ton Research Vessel, with forty years' worth of full mortgage payments remaining. Each additional time you take this Trait, increase the ship's age by a decade and reduce the mortgage payments by one decade as well. Taking this Trait five times means owning a ship outright. If the character already has the *Starship* trait, and musters out with a Trader, Scout, or Research vessel, count that Mustering Out Benefit as if they had taken the *Starship* trait again. *For example, a Scout picks the Starship trait, and then receives two Scout Mustering Out Benefits. Instead of having a Scout on loan from the Scout Service, the character owns a 20-year-old Scout starship with 20 years of the mortgage already paid off.*

Stunt Driver

Prerequisite: Relevant Vehicle Skill 1

The character has a flair for handling vehicles in situations that were well outside the engineering team's parameters when the vehicle was in the design and testing phase. Whenever the character is performing stunts like flying aircraft into tunnels, driving motorcycles down flights of stairs, or even jumping cars off ramps and over ravines, throw the relevant vehicle skill with Advantage.

Other Traits

Artistic

Prerequisite: None

The character is naturally gifted in artistic endeavors. Gain Advantage when rolling a test where artistic talent is relevant.

Attractive

Prerequisite: None

Roll tests with Advantage in situations where good looks might be important.

Codebreaker

Prerequisite: EDU 9+

When attempting to decipher codes and break encryptions, roll with Advantage. This trait can also be applied to languages in which the character is not fluent.

Contacts

Prerequisite: None

The character has highly useful connections. Gain 1d3+1 Contacts (see the Character Generation chapter).

Cyborg Compatibility

Prerequisite: None

The character is highly receptive to cybernetics. The cyborg gains three Cybernetic Points.

Diplomat

Prerequisite: None

When the GM rolls for NPC Reactions to you specifically, they should roll twice and take the more favorable result.

Eidetic Memory

Prerequisite: None

The character's recall is incredible. When rolling to remember detailed information, gain Advantage.

Empath

Prerequisite: None

The character possesses "passive" empathy allowing them to easily read another person's emotions. Whenever trying to determine an NPC's emotional state, or find out if an NPC is lying, the empath has Advantage. This also applies to games of chance and bluffing, such as poker, where reading an opponent is a central aspect to the game.

Evasion

Prerequisite: DEX 9+

With this trait, **diving for cover** does not take up your next action.

Explorer's Society

Prerequisite: None

The character receives membership in the exclusive Explorer's Society. Membership grants a free high-passage ticket for one parsec every two months and free stay at Society hostels in most starports.

Fast Healing

Prerequisite: END 9+

The character recovers on their own from a Minor Wound within 1D hours (rather than a day) in the absence of treatment, and from a serious wound within 3D days of medical care. This is not cumulative with the increased rate of healing when successfully treated by a Surgeon (see below).

Immunity

Prerequisite: None

The character is particularly resistant to toxins and pathogens. When making a throw to resist poison or disease, the character throws with Advantage. When a medic treats this character with Medicinal or Panacea pharmaceuticals, they also gain Advantage.

Intimidating

Prerequisite: None

You just look scary, or you can manifest scariness when you want to. Roll with Advantage on any tests when intimidating people into giving you information or complying with your requests.

Iron Liver

Prerequisite: None

For whatever reason, the character has a high tolerance for alcohol. When rolling to drink someone under the table, roll with Advantage.

Languages

Prerequisite: None

The character is fluent in three additional languages common to the sector.

Packrat

Prerequisite: None

The character knows how to pack and carry equipment efficiently. The packrat is unencumbered when carrying up to twice their STR in items. The character is Heavily Loaded when carrying up to four times their STR in items. Note that this recalculation of encumbrance limits should not include the STR attribute DM.

Radiation Resistant

Prerequisite: END 9+

The character has higher than usual tolerance for radiation. The character only receives 75 per cent of rads from radiation exposure. Round fractions down.

Scavenger King

Prerequisite: None.

The character is extremely talented at finding parts, gear, weapons, or just about anything that the group could need, in a pinch. When using a skill to scavenge or scrounge equipment, roll with Advantage.

Strong-Willed

Prerequisite: None

This character gains Advantage when being threatened, intimidated, or coerced. This trait also applies to any rolls to resist Psychic domination.

Will to Live

Prerequisite: END 9+

When using the Trauma Surgery rules, throw with Advantage when throwing for Trauma Surgery. This trait applies even if the attending physician or autdoc does not have the Surgeon Trait.

Lucky

Prerequisite: None; only in games using the optional Hero Points rules.

Your character starts each game session with 3, rather than 2, Hero Points.

Navigator

Prerequisite: Survival 1

When throwing to navigate a course on a world (land, sea, or air) or to call in fire support, throw with Advantage.

Protector

Prerequisite: Melee Combat skill

Once per battle you can choose to take damage that would otherwise be dealt to another character in close range to you.

Spot Weakness

Prerequisite: none

If the character spends a full minute observing a target, they can spot its weakness with a successful INT 8+ test. All damage rolls should be rolled twice, and the higher result taken. Note that this *does* work for ship combat, only substitute a Computer/INT 8+ test, modified by the vessel's computer DM, instead of an INT test.

Trash Talk

Prerequisite: Carousing 1 or Deception 1

As a free action in a battle, you can attempt a Carousing or Deception test to draw the attention of an enemy nearby or closer to yourself, causing them to attack only you on their next turn.

Equipment

This chapter describes some of the more common items found in an interstellar space opera setting. All prices are in Credits (Cr), the interstellar currency. Thousands of Credits are noted as KCr, and millions of Credits are noted as MCr. A Credit is a futuristic currency roughly equivalent to \$6 USD in 2024 A.D. currency and \$1 USD in 1977.

Encumbrance

To facilitate fast play, **Spaceships & Star Systems** avoids the careful accounting of equipment by weight. Instead, a character may carry a number of major “items” equal to 7 plus their STR DM with no penalty. This represents a Light Load. Characters may carry items beyond this, up to three times the base amount, which constitutes a Heavy Load. A heavily loaded character suffers DM-2 to all physical task throws and can only use a maximum of one move action in a combat round.

An “item” is anything of significant size: a gun, a medkit, a standard length of rope. Larger items may count as more than one item as noted in their description. Small items, such as a compass, a needle, or a candle, do not count as items, subject to the Referee’s judgment.

Tech Levels

Spaceships & Star Systems assumes an interstellar society – as befitting a space opera game. However, not all worlds in such a universe possess the same level of technological development, particularly in frontier or post-apocalyptic settings. Furthermore, Referees may want to choose between grittier, nearer-future interstellar sci-fi and no-holds-barred far-future galactic space-opera. For this purpose, **Spaceships & Star Systems** ranks civilizations according to 17 tech levels, from 0 to 16. We present some rough historical comparisons with our own world to assist Referees and players in their understanding of tech levels. However, these comparisons should not imply that your own game must follow the same technological development.

TL	Notable Characteristics	Historical Comparison
0	No technology, equivalent to the Stone age. Fire, agriculture, and stone tools.	Agricultural revolution, Stonehenge
1	Roughly on a par with Bronze or Iron age technology. Writing and mathematics.	Ancient Egypt, Classical Greece, Rome, and China.
2	Late Medieval technology. Simple black-powder firearms, ocean-going vessels	Renaissance Europe, early colonial America
3	Mass production allows for product standardization, heralding the beginnings of industrial revolution and steam power.	Great Britain circa 1780
4	The transition to industrialization is complete, bringing plastics, radio, and other such inventions.	UK & USA circa 1900
5	Widespread electrification, telecommunications, and internal combustion engines.	The First and Second World Wars
6	Development of fission power and more advanced computing.	Early Cold War
7	Can reach orbit reliably and has telecommunications satellites.	We are here
8	Possible to reach other worlds in the same system, although terraforming or full colonization is not within the culture’s capacity. Nuclear fusion.	

9	Development of crude gravity manipulation which makes space travel vastly safer and faster; first steps into Jump Drive technology. The advent of a wide range of cybernetics. High level EM-voltaic fission power for spacecraft. Domestic chores handled by robots now.	
10	Development of gravitic vehicles revolutionizes transportation and warfare. Superconductors at any temperature	
11	The first primitive (non-creative) artificial intelligences become possible in the form of “low autonomous” interfaces, as computers begin to model synaptic networks.	
12	Weather control revolutionizes terraforming and agriculture.	
13	Powered Armor appears on the battlefield in response to new weapons. “High autonomous” interfaces allow computers to become self-actuating and self-teaching. Gravitics become capable of small-scale manipulation of matter.	
14	Fusion tools and weapons become man-portable. Industrial food synthesizers using only carbon, oxygen, hydrogen, nitrogen and a few other trace elements developed. Food synthesis. Hunger is wiped out, beginning of Post scarcity civilization.	
15	The development of longevity treatments means that the human lifespan is now vastly increased. Small and affordable food synthesizers for homes developed. Starships no longer stock “food” except as a luxury item..	
16	Handheld plasma weapons and energy shields revolutionize warfare.	



Living Expenses

Characters not embarked on a starship must pay for lodging and food. The following table provides costs of living. One column shows a monthly cost of living – assuming long-term purchase of lodging and groceries. The second shows daily living, whenever characters or tourists pay for a motel or hotel room and buy prepared food. These costs include various expenses such as taxes and transportation. Characters should pay according to the quality-of-life representative of their SOC characteristic. Upper class characters living in squalor suffer penalties, as noted below. Food costs account for 1/3 of the living expenses listed below.

Travelers visiting TL 14 & 15 worlds (where food synthesizers exist) can cut food expenses by about 90% for up to High Quality Living but need to have food prep/cooking facilities to realize this savings. Elite living conditions means one does not eat synthesized food but expensive cuisine.

Quality of Living	Monthly Cost	Daily Cost
Starvation (SOC 0-2)	Cr100	Cr3
Subsistence (SOC 3-5)	Cr300	Cr10
Ordinary (SOC 6-8)	Cr700	Cr20
High (SOC 9-B)	Cr2,000	Cr100
Elite (SOC C-F)	Cr15,000	Cr1,000

Starvation living means living in the streets, in a tent, or outdoors and eating just barely to keep the character alive. Clothes are basic and always second-hand or worn out. Healthcare, entertainment, and transportation are not included in this level. A character living at starvation levels is always Fatigued.

Subsistence living is the bare minimum for civilized life – a tiny apartment, shanty, or capsule in a "coffin hotel" and simple food and clothing. Subsistence level living includes public transit, minimal entertainment, and generally inadequate healthcare.

Ordinary living is how most people live in city centers: an apartment, public transit or a small personal vehicle, reasonable food and clothing, reasonable entertainment, and modern healthcare.

High living is the good life: a fancy apartment in the city or a small house, eating at restaurants for most meals, a good personal vehicle, partying on a regular basis, fashionable clothes, and good healthcare.

The **Elite** life means living like a king: a mansion or penthouse, regular feasts, or upscale restaurants, dressing in the finest clothes, and maintaining a prestigious personal vehicle. Healthcare is the best money can buy.

A character with SOC 10+ who does not live at a High or Elite level will suffer DM-2 to all high society related social skill rolls and may be ostracized by their high-class Contacts (at the Referee's discretion).

Personal Armor

Personal armor reduces the damage caused by incoming attacks. Subtract the armor's Protection rating from any damage caused to the character. It is not possible to wear more than one type of armor at a time, other than energy shields, which you may use together with any other armor.

Armor	Protection	Tech Level	Cost	Encumbrance	Skill Required
Civilian/Paramilitary Protection					
Leather jacket	2	1	Cr50	1	-
Heavy duster	3	6	Cr75	1	-
Bulletproof vest	4	7	Cr150	1	-
Synthsilk armor	8	12	Cr6,000	0	-
Energy shield	Special	16	Cr20,000	1	-
Utility Suits					
Envirosuit	3	7	Cr700	2	-
Space suit	6	7	Cr2,000	2	Zero-G 0
Space suit, advanced	6	9	Cr4,000	0	-
Space suit, hostile environment	10	12	Cr10,000	4	Zero-G 1
Space suit, advanced hostile environment	10	14	Cr.15,000	2	Zero-G 1
Envirosuit, advanced	5	12	Cr5,000	0	-
Combat Armors					
Heavy ballistic cloth	6	7	Cr250	2	-
Encased armor suit	9	8	Cr5,000	2	Zero-G 1
Powered armor	18	13	Cr200,000	0 (when worn)	Zero-G 2

Armor Types:

Civilian and Paramilitary Protection consists of those armors that are either highly concealable, or that are acceptable to wear in most civilian settings. Characters wearing **Utility Suits** would never get a second look on the job where those suits are needed but wearing such a suit everywhere would raise eyebrows. **Combat Armor** is never discreet: whoever is wearing combat armor is signaling everyone around them that they are looking for trouble.

Bulletproof vest: lightweight ballistic armor torso protection, easy to wear under clothes.

Encased armor suit: heavy, full body rigid armor, often used by corporate SWAT and high-end mercenaries. The suit offers environmental protection as an Envirosuit (see below) and includes integrated comms and a HUD.

Energy Shield: a high-energy shield emitter worn on a belt clip, capable of stopping massive amounts of damage. The Energy Shield may be worn with other armor. An energy shield completely negates the first hit it receives in combat but is then depleted. Throw 1D every following combat round; on 4-6, the shield regenerates on your turn, and may negate another hit afterwards.

Envirosuit: a full body sealed suit with attached filters and an option to attach oxygen tanks as well. Fully protects against airborne toxins and pathogens. Reduces radiation by 20 rads. The Envirosuit counts as two Items for encumbrance purposes.

Envirosuit, Advanced: as an Envirosuit, but ultra-light. It does not count as an item for encumbrance purposes.

Heavy ballistic cloth: modern heavy-duty ballistic-cloth armor. Commonly worn by soldiers, well-equipped security, and TL7 mercenaries. Counts as two Items for encumbrance purposes and is not concealable.

Heavy duster: long overcoat made of reinforced leather or synth-leather. In some circles, this is the epitome of style.

Leather jacket: a heavy leather or synth-leather jacket.

Powered Armor: servo-assisted fully enclosed combat armor. This powerful armor Grants DM+2 to STR and DEX characteristic checks and allows carrying double the user's Encumbrance. Powered armor grants DM+4 to all melee damage done by its wearer. Powered Armor protects against vacuum and hostile environments, as a space suit, with 6 hours of life support, and reduces radiation by 50 rads. Powered armor does not count as an item for encumbrance when worn.

Space Suit: a standard, futuristic space suit, lighter and cheaper than a 20th Century Terran space suit. A space suit carries life support supplies for up to 6 hours. It protects against Vacuum, Tainted, and Exotic atmospheres, as well as airborne pathogens. Offers 2D hours of protection against Corrosive atmospheres, and 1Dx10 minutes protection against Insidious atmospheres. Reduces radiation by 60 rads. Counts as 2 items for Encumbrance purposes.

Space Suit, Advanced: the final evolution of the space suit. An advanced space suit does not count as an item for encumbrance, is easy enough to use even without a Zero-G skill and provides life support for 12 hours. Offers the same environmental protection as a regular space suit.

Space Suit, Hostile Environment: a heavy-duty space suit designed for extreme conditions, such as Corrosive and Insidious atmospheres. Counts as three items for encumbrance. Protects against Vacuum, Tainted, Exotic, and Corrosive atmospheres, as well as airborne pathogens and toxins, and provides 2D hours of protection from Insidious atmospheres. Carries life support supplies for 6 hours. Reduces radiation by 150 rads. Counts as 4 items for Encumbrance purposes.

Space Suit, Advanced Hostile Environment: same as above but available at TL 14 and only counts as 2 items for Encumbrance purposes.

Synthsilk Armor: advanced bio-engineered spider-silk armor. Synthsilk is easily concealable and does not count as an item for Encumbrance.

Cybernetics

Cybernetic implants, a major theme in many science fiction tales, replace or upgrade body parts with biomechanical technology. Using advanced material science and cutting-edge knowledge of the neural system, cybernetics augment the organic body, adding capabilities beyond those given to it by evolution.

Cybernetic Grades and Points

Cybernetics in **Spaceships & Star Systems** come in four grades, detailed below. Each cybernetic implant cost Cybernetic Points. The implant's Grade is the primary determiner of the number of Cybernetic Points it uses. Characters may have up to 6 Cybernetic Points' worth of implants without penalty. Any more cybernetics, and the character will suffer from cyber-dissociation – being more machine than human. Cyber-dissociation applies a DM-2 penalty to all social skill throws (using SOC or any other characteristics). The only exception is when the character intends to intimidate others. In that case, there is no penalty.

Cybernetic Grades and Points

Grade	Cybernetic Point Cost	Typical cost	Description
A	0	Up to Cr1,000	Common implants used by civilians and typical corporate employees. Many of these can be implanted in out-patient procedures, depending on the world's tech level.
B	1	Up to Cr10,000	Prosthetics and more specialized personal implants. Includes street-level combat implants that may or may not comply with the Law Level of a given world.
C	2	Up to Cr100,000	Highly specialized implants, rare among civilian populations, including military-grade combat implants, and other sophisticated cybernetics.
R	3	Over Cr100,000	The most advanced and invasive implants: the expertise alone required to install these cybernetics makes them exceedingly rare. The expense only compounds their rarity.

A-Grade Cybernetics:

These implants are either superficial, or extremely common among the public on most advanced worlds as to be ubiquitous.

Cyberfinger (TL9; Cr500): cybernetic finger replacement.

Glow Tattoos (TL9; Cr100): these are advanced tattoos consisting of smart bioluminescent skin grafts in complex patterns across the subject's skin. Patterns and designs are up to the subject. The subject may activate or deactivate the tattoos at will.

Internal OmniComm (TL9; Cr100): as an OmniComm (see below) but with a neural interface; this implant allows tele-video communication in the user's mind, without audible speech.

Internal OmniComp (TL9; Cr300): as an OmniComp (see below) but with a neural interface. The user can use their minds to operate the OmniComp without any gestures or speech. The details and consequences of having a computer implanted in a character's brain and connecting to planetary computing grid are left to the players and Referee.

Internal Storage Pouch (TL9; Cr800): abdominal pouch accessible via an artificial sphincter. Stows items up to 0.5 kg in weight and 0.5 liters in volume. The Storage Pouch is discreet and can only be discovered by detailed inspection or medical scans.

B-Grade Cybernetics:

These cybernetic implants include most prosthetics to replace limbs or organs lost to injury, or more advanced and invasive devices that greatly expand human capabilities. Cybernetic prosthetics do not enhance the character's innate characteristics—they only perfectly replace damaged parts. Some of these cybernetics are regulated by local Law Levels, while others are not.

Artificial Gill (TL9; Cr2,500): allows breathing underwater. The artificial gill is powered by the body's own electrical current, and thus requires minimal maintenance. The gills can be hidden by default, though some may want them to be visible.

Cybernetic Eye (TL9; Cr5,000): a baseline cybernetic eye replacement, providing perfect 20/20 vision. This cyber-eye looks indistinguishable from a normal eye. However, many opt to add cosmetic changes to the eye, or even exposed chrome to the eye housing.

Cybernetic Eye, Advanced (TL11; Cr7,500): this implant operates as the baseline cybernetic eye, but also adds telescopic vision, infra-red imaging, and low-light optics.

Cybernetic Arm (TL9; Cr6,000): baseline cybernetic arm replacement. The arm can be customized to look however the character likes. Human-looking cybernetic arms can pass visual inspections but are detected by medical or detailed physical inspections.

Cyberhand (TL9; Cr1,500): cybernetic hand replacement. The hand can look however the character likes.

Cyberleg (TL9; Cr9,000): baseline cybernetic leg replacement. Cybernetic legs are large enough to install an Internal Storage Pouch at regular prices.

Data Safe (TL9 Cr5,000): this small implant stores encrypted files in the character's skull. The data safe cannot be detected by normal sensors; a deep medical scan of the character's brain is required to detect the safe. The character may or may not have access to the data safe, or the decryption key. On worlds with Law Levels 6+, the Data Safe is a regulated cybernetic.

Head Bomb (TL9; Cr3,,000): a tiny remote-controlled explosive device implanted in a subject's brain. The detonation will kill the subject without causing any collateral damage. Head bombs are rarely implanted voluntarily, and are widely illegal.

Internal Blade (TL9; Cr5,000): a set of two 10cm (4") retractable blades are implanted in the character's limbs. These can be wrist blades, knuckle spikes, knee spikes, or even dew claws. The character's unarmed attacks do 2D damage. The blades are constructed out of ceramic composites to avoid detection by most security scans. Only medical scans or TL13 or better sensors will detect the blades. Internal blades are considered illegal on world with Law Level 4+.

Internal Weapon (TL9; Cr5,000, special): this arm-mounted implant allows the character to carry a concealed weapon internally. This can be any pistol-sized weapon limited by tech level: stealth pistol, gyrojet pistol, gauss pistol, blaster pistol, or stunner. The weapon's magazine capacity is half normal but can be reloaded normally via a retractable magazine holder. Internal weapons still suffer the DM-2 penalty to hit while in melee combat. The internal weapon's price is Cr5,000, plus twice the weapon's cost. Internal weapons can be detected with medical scans or detailed physical inspections. Internal weapons are considered illegal on worlds with Law Level 4+.

Internal Filtration System (TL9; Cr3,000): protects from airborne toxins and pathogens.

Internal Oxygen Supply (TL9; Cr4,000): provides 3 hours of oxygen.

Prehensile tail (TL9; Cr9,000): Provides an additional grasping/manipulating appendage. This appendage provides a DM+1 to any opposed grapple checks in melee combat but does not provide any additional actions. The tail is also strong enough to support the weight of its owner.

C-Grade Cybernetics:

These implants are all very invasive, and require the amputation of two limbs, and a great deal of surgery. They are thus almost always restricted and very expensive. C-grade implants are usually reserved for elite military and espionage operatives. Only the most well-connected and wealthy civilians can acquire them.

Advanced Cyberarms (TL9; Cr20,000): This implant replaces both arms, as well as reinforces the spine. Advanced cyberarms give Advantage to all arm/manipulation Athletics throws and DM+4 to unarmed combat damage. Note that this bonus applies to relevant Athletics tests, but not other skill tests. The damage bonus is cumulative with any

internal blade damage bonus, and with the powered armor bonus. Advanced cyberarms count as two implants (total 4 cybernetics points), as they replace both arms.

Advanced Cyberlegs (TL9; Cr50,000): this implant replaces both legs and reinforces the hips and spine. Advanced cyberlegs give Advantage to all Athletics checks involving running or leaping, subject to the same limitations as Advanced cyberarms, above. As an action, the character may throw Athletics 8+ to jump 10m horizontally in any direction or 3m upwards. Treat the character's STR as 4 points higher for purposes of calculating encumbrance limits. This implant also doubles the character's movement speed to 20m per action (up to 40m per round if the character uses both actions for movement). Advanced cyberlegs also reduce falling damage by 1D. Advanced cyberlegs count as two implants (total 4 cybernetics points), as they replace both legs.

Augmented Joints (TL9; Cr25,000): an invasive series of implants replace the character's joints with advanced synthetics, high-tech lubricants and shock absorbers. Augmented joints grant inhumanly fine motor precision. This gives Advantage for non-combat throws that require fine motor manipulation and control. For example: lockpicking, sleight-of-hand, and electronics repair.

Hacking Module (TL9; Cr50,000): this implant consists of an upgraded, specialized OmniComp and dedicated enhanced synaptic neural processors for computing. A discreet neural jack line feed allows the character to connect to any computer directly. The Hacking Module grants a flat DM+1 to the character's Computer skill and allows remote hacking of unprotected electronics at up to 3m. Note that at TL9+, most personal electronics cannot be remotely hacked. The Hacking module is illegal on worlds with Law Levels 4+.

Hypercosmetic Surgery (TL9; Cr75,000): perfect body sculpting and implanted synthetic pheromone glands radically reconstructs the subject's body to be perfectly attractive to other members of their species. Grants Advantage to all social skill throws in situations where physical attractiveness matters.

Subdermal Armor (TL9; Cr15,000): keratin and ceramic bone lacing and light shielding of vital organs provides 2 points of armor protection. The implant is subtle enough to pass visual inspection but can be spotted with sensor scans. Subdermal armor is added to the protection rating of any worn armor. Subdermal armor is legal on most worlds, but usually will be controlled on worlds with Law Level 8+.

Subdermal Armor, Heavy (TL9; Cr20,000): unlike the lighter variety, heavy subdermal armor makes no attempt at being discreet. It provides 5 points of armor protection that is added to the protection rating of any worn armor. Heavy subdermal armor is detectable upon visual inspection and counts as two implants (4 Cybernetic Points). Heavy subdermal armor is illegal on worlds with Law Level 3+.

R-Grade Cybernetics:

Extremely invasive, experimental, and irreversible cybernetics. These implants are all highly illegal for anyone to own, outside of restricted military circles.

Berserker Module (TL9; Cr200,000): this dangerous combat augmentation keeps the user going no matter what injury they sustain. The character stays conscious and active as long as they have even one point of Lifeblood left – even when severely injured. They still die if their Lifeblood reaches zero.

Bastet Frame Upgrade (TL9; MCr1): a radical reconstruction of the entire organic body to grant superhuman agility and speed. The implant doubles the character's DEX (to a maximum of 20), and grants Advantage on all DEX-related Athletics and Stealth throws. Furthermore, the Bastet Frame increases the character's movement speed from 10m per round to 15m per round. The Bastet Frame Upgrade is incompatible with the Hercules Frame Upgrade.

Control Rig Implant (TL9; MCr1): this is a highly specialized implant designed to give elite vehicle pilots even more of an edge. The control rig allows the operator to fully interface their minds with vehicles. The control rig gives the character Advantage on Vehicle skill throws with suitably modified vehicles. This does require the operator to be in the vehicle, and "plugged in." Modifying a vehicle to work with control rig increases its cost by 10%. If the vehicle takes damage, roll END 6+ to avoid taking 1D damage from electrical feedback.

Hercules Frame Replacement (TL9; MCr1): a radical reconstruction of the entire organic body grants superhuman endurance and might. The Hercules Frame doubles the character's STR and END (to a maximum of 20), affecting Stamina, Lifeblood, and unarmed combat damage. It also gives Advantage on all Athletics throws requiring brute strength, and Grapple checks in Melee Combat. The Hercules frame upgrade is incompatible with the Bastet Frame Upgrade.

Military-grade Neural Cyberspace Interface (TL9; MCr1): the ultimate interface between the human brain and a machine. The neural cyberspace interface functions as a Hacking Module, but also grants Advantage to all Computer and Repair throws related to electronics and computers.

Minerva Upgrade (TL13 MCr3): this implant requires the radical reconstruction of the entire organic neural system. It includes synaptic enhancers, nano-tech upgrades to dendrites, and multiple supplemental neural processor implants directly in the brain. The end result is superhuman intelligence, doubling the character's INT (to a maximum of 20).

Neural Booster (TL9; MCr2): this invasive augmentation to the character's nervous system and adrenal glands greatly boosts reaction times and suppresses the fight-or-flight response. The Booster grants an additional action per combat round for a total of three. Characters with the Neural booster implant also roll to avoid Surprise with Advantage. As well, the character never suffers the unskilled penalty (DM-3) when rolling to avoid Surprise.

Vacuum Adaptation (TL13; MCr1): the ultimate spacer implant turns the user into a voidwalker. Internal oxygen reserves, micro-seals, and metal weave skin allow an hour of operation in vacuum without a space suit. An integral grav unit allows short-range maneuvering in low and micro-gravity. The grav unit is too weak to maneuver in any gravity beyond 0.05g. This augment also provides 5 points of integral armor and reduces radiation by 10 rads. The Vacuum Adaptation implant is visible upon medical inspection or sensor scan, but is otherwise quite discreet.

Exploration and Personal Equipment

The following items are common among adventurers and explorers. This list is not complete; the GM should add interesting equipment for their players from other games.

Item	Tech Level	Cost
Advanced Base	8	Cr50,000
Artificial Gill	9	Cr4,000
Backpack	1	Cr50
Binoculars	5	Cr10
Breather	6	Cr75
Cargo Monitor Tag	10	Cr5
Cart, Contra-Grav	13	Cr50,000
Cloaking Device, Personal	16	Cr100,000
Cold Weather Clothing	1	Cr200
Corrosive Gel	10	Cr250

Compass	3	Cr5
Disguise Kit	3	Cr300
Exoskeleton	8	Cr15,000
Field Rations, 5 days	0	Cr125
Firestarters	8	Cr40
Grav Lamp	13	Cr100
Hammock	3	Cr25
Handcuffs	5	Cr10
Hooligan Tool	8	Cr150
LED Flashlight	7	Cr5
Lockpicks	5	Cr25
Long-Range Communicator, 500km range	7	Cr250
Mapper, Instant	9	Cr1500
Measuring Beacon	12	Cr1500
Measuring Tape, Advanced	9	Cr500
Medkit	8	Cr100
Memory Randomizer	16	Cr10,000
Mess Kit, Individual	4	Cr20
Multiscanner	12	Cr2,000
Night Visor	8	Cr100
OmniComm	8	Cr50
OmniComp	8	Cr250
Omnitool	8	Cr150
Oxygen Tanks, 6-hour duration	6	Cr250
Panic Button	14	Cr1,000
Portable Fusion Generator	12	Cr500,000
Portable Generator	5	Cr1,000

Pulverizer	8	Cr40
Radar Mapper	8	Cr1,000
Radiation Detector	10	Cr100
Rescue Bubble	8	Cr900
Rope, 70m	1	Cr50
Sleeping Bag	5	Cr50
Sonar Window	11	Cr900
Spray Sealant	9	Cr30
Super Adhesive	8	Cr20
Super Lubricant	8	Cr15
Tech Toolkit	7	Cr300
Tent	1	Cr100
Tent, Pressure	8	Cr2,000
Thruster Pack	8	Cr200
Water Canteen	1	Cr5
Water Purification Tablets	7	Cr10
Water Saw	8	Cr20,000
Welder, laser	9	Cr6,000

The **Advanced Base** is pressurized, modular, and capable of housing 6 persons. It requires 12 person-hours to assemble. Life support lasts for 24 hours without portable generator to power atmoscrubbers.

An **Artificial Gill** allows unlimited underwater activity on worlds with atmospheres 4-9.

A **Backpack** does not count as an item for encumbrance when worn. The items in the backpack still do count towards encumbrance.

A **(Personal) Cloaking Device** permits its user to become practically invisible. The light-distorting gravitic lensing of the device affects all visible light for organic and mechanical eyes. However, the target still emits infrared heat radiation.

Cold Weather Clothing protects against inclement weather. The TL12 version costs Cr800 and does not count as an item for encumbrance.

A standard set of **lockpicks** in a handy carrying pouch. Attempting to pick a lock without lockpicks penalizes the attempt by DM-2.

A **Contra-Grav Cart** is too slow to use as a vehicle but can carry up to 500kg of gear at a speed of 10m per combat action. With some versions, it is possible to “tether” the cart to a person, which makes the cart follow that specific person at a distance of 3m to 20m.

Corrosive Gel comes in small metallic tubes. It can be used to mark surfaces or to destroy small objects (like door locks). The gel consists of a binary chemical agent in two chambers in the tube. Once opened and applied, the agents combine within 1D minutes. The exact effect is left to the Referee. Each tube is one-use only.

An **Exoskeleton** grants its user a +6 bonus to their STR score for Athletics/STR skill checks. It also allows the character to jump up to 2m vertically, or 5m horizontally, and increases the wearer’s movement speed to 15m/action. Another benefit is that the exoskeleton allows soldiers to march their normal cross-country speed while tiring at half the rate. The exoskeleton’s batteries are good for 48 hours of activity before requiring replacement. At higher tech levels, exoskeletons are often replaced by cybernetics.

5-days' worth of **Field Rations** each count as a single item for encumbrance. TL9+ field rations are much lighter: 25 field rations count as one item.

Firestarters are fast-burning chemicals in one-use packages. They will automatically start a sustainable fire with prepared wood and brush kindling. Throw Survive/INT 6+ to start the fire if the wood or other fuel is wet.

A **Grav Lamp** is a floating hands-free light source. It can illuminate an area between 2m and 10m in radius. The illumination radius is adjustable by means of a small lightweight “anchor” worn on the person and does not count as an item for encumbrance. The grav lamp will float near or next to the anchor, between 0.5m and 10m away, depending on the setting used.

A **Hammock** is a cloth or synthetic textile temporary sleeping surface, suspended between two fixed points. It can also be used as a shade. Supports up to 150 kg.

The **Hooligan Tool** is a 0.8-meter, 4 kg tool is designed to breach common door/hatch types. There is forked spade end (for getting doors open), a horn (for getting that initial grab into opening an iris valve or busting padlocks), and a wedge (for those pesky hatches). The tool is designed to maximize leverage. Made of special alloys and composites, the tool is non-sparking, a feature that prevents accidents in explosive atmospheres such as a ship with a liquid hydrogen leak. Complete with fiberglass shaft and hand grips made from non-conducting material.

An **LED Flashlight** is a hand-held, rubberized, sturdy light source with a variable light aperture. The 2m cone of light has a range of 50m, but it can be adjusted to illuminate a 5m radius. Smaller, more expensive (Cr20) versions can be mounted on weapons or clipped to armor. A TL7 LED Flashlight’s battery will last for 24 hours. By TL11, the battery will last for a decade of continual use.

A **Mapper (Instant)** can be attached to any hand computer or used alone. It consists of a computer, display, and launcher for a data-gathering probe. The probe is an anti-grav unit that will rise 100-200 m into the air and take 360-degree image of all visible terrain. This data is then compiled into a 2D, or 3D map displayed by the base unit. The Mapper also instantly calculates topographic features and distances to user-selected points.

A **Measuring Tape (Advanced)** consists of a base unit and one or more movable beacon units. When activated, the device displays the exact distance between itself and the beacons. It can be thus measuring the dimensions of any object, by placing the base at one edge and the beacon at the other, or placing two beacons on either side, or measure area by placing beacons on 4 sides.

Measuring Beacon: A larger-size version of the Advanced Measuring Tape, which can be used as a homing beacon. By leaving the base at a predetermined point and carrying the beacon, the user will always know which direction and how far to go to return to the base unit. The Measuring Beacon has a 500km range.

A **Memory Randomizer** is an insidious disguise device: everyone who comes into contact with the wearer of the Randomizer perceives the wearer but cannot accurately describe them. This makes them impossible to identify by memory unless the target makes a successful INT 12+ throw. The Memory Randomizer can be placed on an object to make it so ubiquitous as to be unrecognizable.

A **Mess Kit (Individual)** includes plate, utensils, cup, storage case and disposable cleaning cloths and counts as one item.

The **Multiscanner** combines several sensor functions: it can detect radiation, electromagnetic emissions, metals, and a limited set of chemicals and biological compounds. It can also perform standard blood tests.

The **Night Visor** combines low-light and infra-red vision goggles into one handy device.

Today's smartphones will eventually evolve into an **OmniComm**, a combination of all your telecom needs in one device, with holographic augmented reality capability. The same applies the **OmniComp** – a hand-held, light-weight computer which evolved from both the laptop and the tablet computer. Both devices are designed to integrate with whatever telecommunications networks are present on a given world. TL8 batteries for these devices last for a few days; TL9 batteries last for months between recharging.

The **Omnitool** is an auto-adjusting, auto-fitting repair tool. It will fit exactly to any kind of bolt, screw or fastening device, and also doubles as wire-cutters, small hack saw, flashlight, and a myriad of other tools. All this is packed into one item's worth of encumbrance!

A **Panic Button** uses ultrasonic waves and other sensory inputs to produce a physiological and emotional terror response. The Panic Button influences the emotional states of creatures within a 5m wide, 15m long cone, forcing them to make Morale rolls.

A **Pressure Tent** lacks an airlock and must be depressurized to enter or leave; it can house up to 2 people and requires an external oxygen tank.

The **Pulverizer** is – a combination of hammer, nail puller and pry bar. Made of high-tech materials to be lightweight but highly durable. The Pulverizer adds DM+1 to any Strength roll to force open a mechanical object such as a door or iris valve.

The **Radar Mapper** uses radar technology to scan a room or similar space, producing a 3D map of it, to a maximum volume of 10m by 10m by 10m.

The **Radiation Detector** is a matchbox sized device that displays radiation levels in a 10m radius. It also indicates the type of radiation if that is important. The detector can also serve as an alarm, chiming loudly when radiation levels are dangerous to humans. This feature can be shut off.

A **Rescue Bubble** is a 2m-diameter plastic bubble. Piezoelectric layers translate the user's movement to electricity to recharge the bubble's battery. It contains enough life support supplies for 2 person-hours of operation. The bubble's skin can self-repair all but the most serious punctures.

A **Sleeping Bag** is a cloth or synthetic padded bag for one person, to provide insulation/ cover while sleeping. At TL 7, cold weather bags are available. Regular bags are effective to zero degrees centigrade, while cold weather bags, costing Cr150, are insulate to negative 30 degrees centigrade.

A **Sonar Window** is flat-screen device that attaches to a wall/partition. It uses sonar to display what is on the other side of the wall. Image quality depends on Tech Level. The TL11 version displays basic outlines, the TL 12 version costs Cr2,000 and improves image quality and 3D effect. At Cr7,000, the TL14 version's display is virtually indistinguishable from that of an actual window.

The **Spray Sealant** can seal torn space suits and small hull breaches. The canister is good for three such applications, or one larger hull breach.

The **Super Adhesive** is instant bonding and possesses super-strength. The adhesive comes in roughly 1L canisters that are sufficient for five generous applications. The adhesive adheres to most surfaces, has a drying time 1 minute. Pulling apart the two bonded objects requires a STR 12+ test and will ruin both objects. A special chemical is available for removing people glued to objects with Super Adhesive. It costs Cr100 per application.

The **Super Lubricant** is composed of near-frictionless space-age synthetics. Each can is good for six applications. The lubricant is a standard part of a maintenance tech's toolset. In addition to loosening stuck objects and ensuring that the internal workings of any mechanical device are working properly, the Super Lubricant can render any surface near-frictionless. Standing on a surface coated in Super Lubricant requires an Athletics/DEX 10+ throw. Walking or, heaven forbid, running on such a surface is impossible. Crawling can be done at 1m per round.

A **Thruster Pack** requires Zero-G skill level 0 and allows maneuvering in zero-G conditions at normal movement rates. Note that this is a TL8 device and does not use any anti-gravity technology. Characters and objects moving by thruster pack are still subject to the laws of motion.

Water Purification Tablets cost Cr10 for a pack of 50; each tablet can sterilize up to 1L of water from most types of microorganisms.

A **Water Saw** requires a separate power supply and a large volume of available water. Pumps create extreme water pressure (90,000 psi or more) which is directed through a tiny nozzle. The stream is powerful enough to cut through concrete, stone, and even light metals. Weighs 1000kg and is usually mounted on an exoskeleton or small vehicle.

The handheld **Welder** uses a focused laser beam to perform cutting and welding operations. It can cut through a reinforced bulkhead in 1D starship combat rounds (6-36 minutes). Roll Repair/DEX 10+ to reduce the time to one starship combat round (6 minutes) As a weapon, the laser welder is inaccurate and clumsy, but extremely dangerous: it does 4D damage with a range of 1/5 and has energy for 5 "shots." As a weapon, the welder also has the Fire aspect.

Pharmaceuticals

Below is a brief list of pharmaceuticals and drugs that are available at various tech levels.

Anti-Radiation

Administered before or immediately after radiation exposure, this drug absorbs 100 rads. Taking more than one dose a day causes 1D *permanent* END damage.

Cost: Cr1,000/dose

Tech Level: TL8

Catsight

This medication grants its user night vision for up to 12 hours. The character does not suffer penalties from operating and fighting in low-light conditions and only suffers DM-1 in total darkness.

Cost: Cr100/dose

Tech Level: TL9

Fast Forward

This drug slows metabolism by a ratio of 60 to 1 – a subjective day to the user is 2 months of real time. Note that this drug will greatly reduce life-support consumption and is often included in emergency survival kits aboard starships.

Cost: Cr200/dose

Tech Level: TL11

Slow Motion

This drug accelerates metabolism by a ratio of 1 to 60 – a subjective hour to the user is 60 hours of real time. Note that this drug accelerates healing accordingly. Using this drug is dangerous without Medicine 1 or better care.

Cost: Cr300/dose

Tech Level: TL11

Hyperspace

Hyperspace is a powerful stimulant, allowing characters to function perfectly for up to 72 hours straight without rest. Once its influence expires, the character is Fatigued (DM-2 to throws), loses 1D Stamina, and must rest for at least 12 hours to recover.

Cost: Cr50/dose

Tech Level: TL9

Longevity Treatment

Longevity drugs prevent aging. For them to be effective, a character must take one dose each month. If the character misses even one month of Longevity Treatment, they revert to their chronological age within a week, which may be lethal in some cases.

Cost: Cr5,000/dose

Tech Level: TL15

Panacea

The Medicinal drug represents a wide variety of vaccines, antitoxins, antibiotics, and other pharmaceuticals. Medicinal allows a character with at least Medicine 1 to neutralize a disease or poison on a throw of Medicine/EDU 8+. The cost of any drug is at the Referee's discretion. Advanced TL11+ medications cost ten times as much but grant Advantage on the Medicine throw.

Cost: Cr50+/dose

Tech Level: TL5

Robots

Robots! The very word conjures up hopes and fears for the future. The idea of an autonomous mechanical entity is old, but its implementation became reality in the early 21st century CE on Earth (TLs7-8). At first, robots revolutionized industrial processes, but eventually even vacuum cleaners were roboticized. In these rules, contrary to various dictionary definitions, "robot" refers to a mobile, autonomous (or remote-controlled) machine capable of varied actions.

All robots and drones have a Chassis and a CPU. All robots (but not drones) have a Robot Type. It is possible to further modify robots, and we present a variety of options, but these modifications are not mandatory. Robots have a number of Build Points determined by their mass, limiting the total number of components that can be installed. For the sake of rules simplicity and clarity, like organic beings, Robots have Stamina (superficial damage capacity) and Lifeblood (internal damage capacity). They also have armor that functions like personal armor to reduce the damage of attacks.

Note that robot base speed is 5m/action. Higher speeds require the installation of Modifications. Robots start with Sensors +0, further modified by Type and specific Modifications.

Robot design sequence

1. Select a Chassis. This determines Mass, Stamina/Lifeblood, Build Points, and Armor.
2. Select a CPU. Drones have no CPU; they always require a sentient operator. Smart drones and robots can operate autonomously. The CPU determines the robot's Intelligence and skill points.
3. For robots, select a Robot Type. This grants certain Modifications, two Base Skills, and could multiply the Chassis' cost.
4. In addition to Base Skills, robots with advanced CPUs have skill points to spend on skills. Use these skill points to improve Base Skills, or to purchase new ones. The maximum level in any skill depends on the CPU.
5. Optional: purchase modifications, by spending Build Points.

Chassis Table

Mass (kg)	Stamina/ Lifeblood	Build Points	Unarmed Damage	Base Armor	Cost (Cr)
5	1/2	1	1D-2	2	750
10 (-1 to hit)	3/6	3	1D-1	3	900
25	5/10	4	1D	3	1200
50	7/14	6	1D	4	2,000
100	9/18	6	1D+1	4	4,500
200	12/24	8	1D+2	5	5,000
400	15/30	9	2D	5	6,000
600	20/40	9	2D	8	7,000
1000+	25/50	10	3D	12	10,000

CPU Table

CPU	TL	Intelligence	Skill Points	Max Skill Level	Cost (Cr)
Drone	6	-	-	-	50
Smart Drone	8	2 (-2)	1*	1	1,000
Basic Autonomous	9	4 (-1)	Base	1	5,000
Advanced Autonomous	10	5 (-1)	Base+1	1	10,000
Simulated Intelligence I	11	6 (0)	Base+2	2	100,000
Simulated Intelligence II	13	8 (0)	Base+4	3	1,000,000
True AI	16	12 (+2)	Base+10	5	Priceless

* Smart Drones do not receive base skills.

Robot Types

Robot Type	Integral Modifications	Base skills (level 1)	TL	Chassis and CPU Cost Multiplier
Combat	Heavy combat chassis AR x2	One weapon skill, Tactics	10	X3
Humanoid	Passes as human on casual inspection; its sensors mimic human senses.	Any 2	13	X10
Janitor/ Labor	-1 Sensors	-	8	X0.5
Medical	Medical Instruments cost 1 BP; DEX 8	Medicine, Science	13	X4
Protocol	-	Liaison, Admin/Steward	12	X0.75
Pursuit	Move x2	Athletics or Vehicle Skill, Tactics	9	X1
Repair	Tools cost ½ BP	Repair, Computer	10	X1.5
Scout	Sensors +2	Stealth, Recon	9	X1
Security	Sensors +1	One weapon skill, Recon	9	X1

Robot Modifications and Upgrades

Modification	Description	BP	TL	Cost (Cr)
Additional Limb	Additional arm	1	8	700
Aircraft Flight	Capable of flight; robot must be at least 50kg in mass. Can fly up to 500km/h	4	8	25,000
Armor Upgrade: +1 Armor	Basic armor upgrade by 1 point of armor; max total 15	1 / +1	8	100 per point of Armor
Detachable Surveillance Module	Allows remote aerial reconnaissance	2	9	1,000
Equipment	Tools or other miscellaneous equipment	1 / tool	8	Varies
Grav Module	Capable of flight, regardless of mass	1	12	10,000
Holographic Camouflage	Obscures and breaks up silhouette, causing DM-2 to hit the robot.	2	12	2,000
Laser Welder	laser welder	1	8	8,000

Bot Type	TL	Cost	Type	Mass	Stamina	Lifeblood	Armor	Sensors	Speed
Android	15	Cr1046100	Humanoid	100kg	9	18	8	+0	10m
CPU:	Simulated Intelligence I		INT	8 (0)					
Skills:	Carousing 2, Gun Combat 1, Liaison 2, Mêlée Combat 1								
Modifications:	Subdermal armor x1, Speed 1								

Bot Type	TL	Cost	Type	Mass	Stamina	Lifeblood	Armor	Sensors	Speed
Autodoc	13	Cr1,022,000	Medical	200kg	12	24	5	+3	0
CPU:	Simulated Intelligence I		INT	8 (0)					
Skills:	Medicine 3, Science 3								
Modifications:	Medical instruments, DEX 8 (0), sensors +4								

Bot Type	TL	Cost	Type	Mass	Stamina	Lifeblood	Armor	Sensors	Speed
Security Bot	9	Cr6850	Security	100kg	9	18	10	+2	10m
CPU:	Basic Autonomous		INT	4 (-1)					
Skills:	Gun Combat 1, Recon 1								
Modifications:	Light Weapon Mount, SMG (2D damage), Munition Hold, sensors +1, Speed 1								

Bot Type	TL	Cost	Type	Mass	Stamina	Lifeblood	Armor	Sensors	Speed
Warbot	10	Cr53850	Combat	400kg	15	30	15	+2	10m
CPU:	Advanced Autonomous		INT	5 (-1)					
Skills:	Gun Combat 1, Melee Combat 1, Tactics 1								
Modifications:	2 Heavy Weapon Mounts, Light Machinegun (3D damage) and Grenade Launcher (by grenade), Munition Hold, sensors +2, Retractable Claw (3D damage)								

Bot Type	TL	Cost	Type	Mass	Stamina	Lifeblood	Armor	Sensors	Speed
Recon Drone	8	Cr3,000	Scout	10kg	3	6	3	+1	10m
CPU:	Smart Drone		INT	2 (-2)					
Skills:	Recon 1								
Modifications:	Sensors +1, Quad Rotors, Speed 1								

Vehicles

Science fiction stories often feature wild chases, armored warfare, or exploration of remote planets by all sorts of vehicles. A wide variety of vehicles exist across cultures and species for planetary, atmospheric, and oceanic transportation. In this book we look at Grav vehicles. First available at TL 9, grav vehicles become ubiquitous for personal transport by TL 12 gaining ground each TL as prices drop.

Characters may purchase a vehicle at its base Tech Level or on any higher TL. Higher-tech vehicles typically have greater range and endurance, at the Referee's discretion. **N.B.** Grav drives work by creating a gravity well which the vehicle "falls into" in whatever direction is needed. Vehicles **less** than 1/2 tons in size are too small to have artificial gravity inside so the occupants are in free fall. The four passenger Air Car is 1 ton in displacement.

Stat Block Explanation

Chassis Code: Volume of the vehicle. See vehicle design system chapter.

Open or Closed: the vehicle is either open topped or closed.

Tech Level (TL): technological level, as noted above.

Cost: in thousands of Credits (KCr).

Agility: represents the vehicle's maneuverability. Applies as a DM to skill and Position throws in vehicle combat.

Speed: top speed in km/h; cruising speed is 75% of the listed top speed; off-road speed is equal to 50% of top speed.

Range: how far the vehicle can go at cruising speed before refueling. Given in kilometers. Or in time

Armor: the vehicle's Armor Class: Unarmored, Light, or Heavy.

Crew/Passengers: the first number shows the number of crew members the vehicle requires; the second, the number of passengers it may carry.

Cargo: dedicated cargo capacity in liters or tons.

Weapons: weapons and mount type included in the vehicle's price by default. Heavy weapons use the Heavy Weapons skill. Gunnery weapons use the Gunnery skill.

Cepheus Engine SRD/Core Conversion Note

To convert **Cepheus Engine SRD/Core** vehicle armor to **Spaceships & Star Systems**, use the following table:

CE: SRD/Core Armor Rating	Spaceships & Star Systems Armor Class
6 or lower	Unarmored
7-24	Light
25 or higher and/or Hull/Structure of 40/40 or greater	Heavy

When using vehicles from other Cepheus Engine books that use multiple armor ratings, such as different armor for each vehicle facings, simply average the armor rating (rounding down fractions) and consult the table above.

Grav Vehicles

Aircar		Grav vehicle	
A simple civilian gravitic car		Armor	none
Chassis Code	5	Agility	+1
Open or Closed	Closed	Speed (km/h)	100
Tech Level	12	Range (km)	6 months
Cost (KCr)	11.7	Cargo (tons)	0.14 (1,954 liters)
Crew/Passengers	1/3	Weapons	none
Features	5,000 Km radio, Controls Adv.		

Grav APC		Grav vehicle	
Armored Personnel Carrier 4 Dtons		Armor	Light
Chassis Code	8	Agility	+3
Open or Closed	Closed	Speed (km/h)	600
Tech Level	12	Range (km)	1 month
Cost (KCr)	473	Cargo (tons)	0.44
Crew/Passengers	2/6	Weapons	Plasma gun in Small Turret
Features	Features: 5k km radio, Hostile Env Prot., Neural link, Sensors +0		

Grav Submersible		Grav vehicle	
Underwater transport & above		Armor	none
Chassis Code	T	Agility	-1
Open or Closed	Closed	Speed (km/h)	600
Tech Level	12	Range (km)	1 month
Cost (KCr)	312	Cargo (tons)	3
Crew/Passengers	2/72	Weapons	None
Features	Radio 5k Km, Sensor -2, Sonar		

Weapons

Interstellar adventurers face their adversaries with blades, bullets, and blasters. Here we present a few common and iconic weapons used by starfarers.

Stat Explanations

Tech Level (TL): technological level, as noted above.

Range: Effective/Maximum range in meters. To attack with a ranged weapon within effective range throw Gun Combat/DEX or Heavy Weapon/DEX 8+; beyond effective range, throw Gun Combat/DEX or Heavy Weapon/DEX 10+.

Damage: damage caused by the weapon, expressed as d6s.

Magazine: The amount of ammunition the weapon holds. If the magazine requires additional time to reload, this is noted.

Ammo Cost: per magazine, in Credits.

Cost: The weapon's cost, in Credits.

Weapon Aspects

Weapons have Aspects describing any special characteristics, as noted on their table.

Auto X: These weapons fire multiple rounds with every pull of the trigger, filling the air with a hail of fire. A weapon with the Auto aspect can make attacks in three fire modes: single, burst, and full auto, as described in the Combat chapter.

X AV Hits: These weapons are useful for attacking armored vehicles.

Blast X: This weapon has an explosive component or is otherwise effective against all targets in its blast radius. The number given is the blast radius in meters. It is possible to avoid or minimize blast damage, see **Diving for Cover** in the Combat chapter.

Bulky: A Bulky weapon has powerful recoil or is simply extremely heavy. This makes it difficult to use effectively in combat by someone of a weak physical stature. Characters with STR 8 or less suffer DM-2 when using such weapons. Bipod and Tripod accessories (see below) remove the Bulky aspect, as long as the weapon is stationary and mounted on the bipod or tripod.

Double Tap: the weapon can be fired rapidly, but at a severe loss of accuracy. It may fire 2 bullets in one attack to gain DM+1 to damage.

Fire: On a successful hit, throw 6+ for the target to catch fire. A burning target takes 2D damage per combat round for 1D rounds, or until put out. See the Environmental Hazard Chapter for Fire effects.

Blaster: At the Referee's discretion, atmospheric conditions, such as thick smoke, might incur a negative DM to blaster fire.

Scattergun: Each attack fills the air with a hail of small projectiles, either flechettes or shot. Scatterguns cause 4D damage at Effective range or closer and attacks with scatterguns are made with DM+1. Anyone within 1.5m of the main target is also attacked by the scattergun effect, but at 2D damage. Beyond Effective range, scatterguns only inflict 2D damage and have no bonus to hit.

Stun: These weapons deal non-lethal damage and will incapacitate a living target instead of killing it. Damage is only deducted from Stamina, after considering any armor. If the target's Stamina is reduced to 0, the target is incapacitated and unable to perform any actions for a number of rounds by which the damage exceeded his Stamina. Characters completely recover from Stun damage after one hour of rest.

Throwable: these weapons may be thrown; effective range equals to five times the thrower's STR; maximum range equals STRx10.

Two-Handed: this melee weapon requires both hands to wield. However, all rifle-sized weapons must be wielded with two hands.

Zero-G: the weapon does not suffer a penalty for firing a weapon in zero-g conditions. Blasters automatically have the Zero-G Aspect.

Melee Weapons

The following weapons use the Melee Combat skill. Melee weapons cannot harm vehicles except in special cases, which are left to the Referee's discretion.

Weapon	TL	Cost	Dmg	Aspects
Axe	0	Cr25	2D	Throwable
Broadsword or Great-Axe	2	Cr300	4D	Bulky, Two-Handed
Cudgel	0	Cr10	2D	
Cutlass	3	Cr100	3D	
Dagger	0	Cr10	1D	Throwable
Machete	3	Cr50	2D	
Neural Whip	13	Cr500	1D	Stun
Shield	0	Cr20	1D	
Spear	0	Cr15	3D	Throwable
Staff	0	Cr10	2D	Two-Handed
Stun Prod	8	Cr300	2D	Stun
Sword	1	Cr150	3D	
Unarmed attack	-	-	STR DM	
Vibro-Blade	13	Cr500	4D	

Axe (TL0): a one-handed axe made from metal or stone, anything from a stone-age tool through a medieval war axe to a modern fire axe.

Broadsword (TL2): a large two-handed sword, counts as 2 "Items" for encumbrance purposes. A two-handed **Great-Axe** uses the same stats.

Cudgel (TL0): a large club or mace.

Cutlass (TL3): A short, broad slashing sword with a slightly curved blade and basket-guard hilt. Traditionally used by Star Troopers and pirates.

Dagger (TL0): a straight, short knife. When wielding a Dagger, a character may use both actions in a combat round to attack.

Machete (TL3): A simple yet sturdy broad blade used for cutting foliage and foes alike.

Neural Whip (TL13): Consists of a stocky handle connected to a flexible strap. Each stroke by this weapon causes stun damage as above. However, it has two additional vicious effects. First, any target hit by a neural whip must throw END 10+ or fall to the ground suffering from nightmarish pain and be incapacitated for 2D6 combat rounds. Second, in addition to the stun damage, the neural whip causes 1D physical damage per hit.

Shield (TL0): A personal shield, with which characters can bash enemies for 1D damage. Anyone carrying a shield penalizes enemies by DM-1 when they attack. If a shield is used with the Overwatch action in combat, the attack is penalized by DM-2.

Spear (TL0): from a sharpened shaft to a metal-tipped spear, this is a basic, yet effective, melee weapon.

Staff (TL0): A long wooden shaft, sometimes with metal fittings, used with two hands.

Stun Prod (TL8): A high-tech riot weapon augmenting the baton's blunt force with an electric charge capable of stunning opponents.

Sword (TL1): one of any variety of medium-sized one-handed swords, from gladius (shortsword) to longsword and rapier.

Vibroblade (TL12): An intermediate-sized bladed weapon using hypersonic micro-vibrations of the blade to create a potent cutting force.

A note on unarmed damage: any character can inflict at least 1 point of unarmed damage (before armor) even if their STR DM is 0 or lower.

Common Ranged Weapons

The following weapons use the Gun Combat skill. Unless otherwise noted, consider them as Small Arms against vehicle armor.

Projectile Weapons							
Weapon	TL	Cost	Range	Dmg	Mag	Ammo Cost	Aspects
Gyrojet Rifle	9	Cr900	100/400	3D	20	Cr15	Auto 2, Zero-G
Gyrojet Pistol	9	Cr400	10/20	2D	8	Cr10	Zero-G, Double Tap
Pulse Rifle	9	Cr1,000	200/400	3D	40	Cr30	Auto 3
Assault Rifle	7	Cr300	50/200	3D	30	Cr15	Auto 2
Autopistol	5	Cr150	10/50	2D	16	Cr7	Double Tap
Stealth Pistol	8	Cr500	5/20	2D	6	Cr20	Double Tap
Bow	0	Cr60	300/600	2D	1	Cr10	

Carbine	5	Cr250	50/200	3D	10	Cr12	Double Tap
Crossbow	2	Cr75	300/600	3D	10	Cr1	
Gauss Pistol	12	Cr1,000	20/100	3D	30	Cr30	Auto 2
Gauss Rifle	12	Cr1,500	300/600	4D	100	Cr40	Auto 4
Light Machinegun	7	Cr1,200	100/300	3D	100	Cr125	Auto 4, Bulky
Revolver	4	Cr150	10/50	2D	6	Cr5	
Rifle	5	Cr500	200/400	3D	10	Cr15	
Shotgun	4	Cr200	20/40	4D	6	Cr10	Scattergun
Submachinegun	5	Cr500	30/100	2D	30	Cr20	Auto 3
Tangler	12	Cr750	30/90	-	1	Cr100	

Assault Rifle (TL7): Standard military arm on mid-tech worlds. An automatic rifle that fires an intermediate caliber. At the Referee's discretion, its ammunition, or even magazines, may be interchangeable with those of a Carbine.

Autopistol (TL5): Semi-automatic handgun fed from a magazine.

Bows and Crossbows (TL0 and 2, respectively): muscle-powered ranged weapons. Ammunition for a **Bow** is held in a quiver of 20 arrows, which counts as one encumbrance item. A **Bow** may fire once a round; a **Crossbow** requires 2 actions to reload; a quiver holds 20 crossbow quarrels and counts as one encumbrance item.

Carbine (TL5): military long-arm that uses a smaller caliber than a full-scale rifle. Carbines are lighter and shorter than rifles, and are often employed as survival weapons.

Gauss Pistol and Rifle (TL12): These weapons accelerate small metal spikes to supersonic velocities. Though the principles behind their function have been understood since the early industrial age, Gauss weapons are typically beyond the manufacturing capabilities of frontier worlds. They do appear, from time to time, in the hands of well-equipped mercenary forces.

Gyrojet (TL8): Designed for use in zero-G environment, the gyrojet rifle fires self-propelled rocket rounds. It has minimal recoil and works perfectly in hard vacuum. The Gyrojet Pistol uses the same rounds as its larger cousin, but is used as a sidearm.

Light Machine Gun (TL7): Standard mid-tech squad-level support automatic weapon, typically belt-fed. Considered as two items for encumbrance purposes.

Pulse Rifle (TL9): An advanced rifle firing electrically ignited, caseless, high explosive, armor-piercing rounds. Provides a high rate of fire and a large magazine capacity.

Revolver (TL4): Simple semi-automatic pistol using a manually loaded rotating drum to feed the bullets. A reliable weapon.

Rifle (TL5): a standard military firearm on low-tech worlds that uses a large caliber projectile. At higher TLs, up to and including TL9, such weapons often serve as dedicated sniper rifles.

Shotgun (TL4): Scattergun firing a "shot" palette capable of hitting multiple targets at once. These particulate stats represent a pump-action weapon with an internal magazine.

Stealth Pistol (TL8): This is an especially light, discreet, and concealable weapon made from advanced polymers. A concealed stealth pistol can also be disguised as a number of more innocuous items, like comms, digital recorders, and so on.

Submachinegun (TL5): Light automatic weapon that fires pistol rounds. Submachinegun bullets are interchangeable with those of the autopistol; at the Referee's discretion, so are the magazines.

Tangler (TL12): A stubby, tube-like weapon using a gravitic launch system to deliver a capsule to its target. On a hit, the capsule erupts into a mass of adhesive tentacle-like strands, entangling the target creature and any other creature within a 5m radius. Any creature caught in the strands must roll STR 12+ to break out. The Tangler Gun creates enough strands to entangle a creature up to 500kg in weight; larger creatures are unaffected. On a failed roll, the target is immobilized and cannot act; they may attempt to free themselves each minute (10 combat rounds). Other characters can also cut entangled targets free using edged weapons. The Tangler comes with solvent capsules – which the weapon itself can launch as projectiles – which dissolve the tangling strands holding captives. Tangler strands hit with a solvent capsule will dissolve in one minute.

Energy Weapons							
Weapon	TL	Cost	Range	Dmg	Mag	Ammo Cost	Aspects
Blaster Pistol	13	Cr5,000	50/200	4D	20	Cr100	blaster, Double Tap
Blaster Rifle	13	Cr10,000	200/400	5D	50	Cr500	Auto 3, blaster
Blaster Pistol	10	Cr1,500	50/200	3D	10	Cr500	Double Tap, blaster
Blaster Carbine	9	Cr3,500	300/500	4D	30	Cr1,500	Double Tap, blaster
Plasma Rifle	16	Cr15,000	150/300	6D	10	Cr500	Fire
Stunner	10	Cr600	10/30	3D	10	Cr10	Stun, Zero-G

Blasters (TL13): are advanced energy weapons with a compact, internal battery, which is also removable and rechargeable.

Blaster Pistol (TL10): Handgun-sized directed energy weapon attached to a belt-mounted power pack. The pistol and its power pack are considered one item together. The powerpack is rechargeable from any major power source, such as a ship's powerplant.

Blaster Rifle (TL13): Heavier version of the blaster carbine, with better armor penetration, range, and even anti-vehicular capabilities. Requires a rechargeable heavy backpack power unit, which counts as a separate item. It is rechargeable from any major power source, such as a ship's power plant.

Note that **blaster weapons** suffer DM-1 to hit when used in environments with a great deal of particulates in the air, like sand, or ash. In these conditions, their ranges are reduced by half as well.

Plasma Rifle (TL16): The ultimate small arm, using miniaturized plasma gun technology to propel magnetically shaped pockets of super-hot plasma at its targets.

Stunner (TL10): Firing a precise electromagnetic pulse, this non-lethal weapon disrupts the target's neural processes, leading to stun and potentially unconsciousness.

Common Small Arm Accessories

The following accessories are commonly available for ranged weapons.

You may attach a **Bayonet (TL2)**, identical to a dagger in its game statistics on its own, to any rifle-sized weapon. A rifle with a bayonet serves as a melee weapon equivalent to a Spear (3D damage).

Laser Sight (TL7): the bonus for Aimed Shots increases to DM+2, but only within Effective range. The DM+3 limit on aimed shot bonuses to hit is still in effect. Cr100.

Scope (TL6): the weapon avoids the penalty for firing beyond effective range, as long as the character used the Aimed Shot action before firing. Maximum range still applies. Cr200.

Silencer (TL6): May be attached to any firearm. Silencers work for single shots, and short bursts, but never Full Auto attacks. Silencers provide a DM-4 to hear the gunshot sound. Cr250.

Smart Weapon (TL10): connects to a HUD or an implanted OmniComp. Grants DM+1 to all attacks. The Smart Weapon bonus is not cumulative with laser sights. This means that after one Combat Action aiming, the character can fire at DM+3. The DM+3 limit on aiming bonuses still applies. Cr1,000.

All Heavy weapons can be mounted on a **Tripod (TL4)**, which negates their Bulky aspect. The weapon cannot be moved while mounted on a tripod. Tripods take 10 combat rounds (one minute) to set up. Cr100.

Common Heavy Weapons

The following weapons use the Heavy Weapons skill. All heavy weapons are considered 3 items each for encumbrance purposes. Ammunition belts, magazines, and individual rockets are each considered one item for encumbrance purposes.

Weapon	TL	Cost	Range	Dmg	Mag	Ammo Cost	Aspects
Disposable Anti-Vehicle Rocket	7	Cr200	50/200	5D	1	-	Blast 1, Bulky, 2 AV hits
Flamethrower	6	Cr1,000	5/20	3D	5	Cr25	Bulky, Fire
Fusion Gun	14	Cr100,000	300/600	12D	-	Cr65,000	Bulky, Fire, 4 AV hits
GP Machinegun	5	Cr1,500	200/400	3D	100	Cr150	Auto 4, Bulky
Grav Launcher	13	Cr20,000	500/1000	10D	1	Cr100	Blast 5, Bulky, Fire
Grenade Launcher	7	Cr400	100/500	By grenade	6	-	Bulky
Guided Anti-Tank Missile	7	Cr4000	200/600	5D	1	Cr200	Blast 1, 2 AV hits
Light Assault Gun	8	Cr600	100/300	5D	5	Cr30	Bulky, 2 AV hits
Plasma Gun	12	Cr20,000	200/500	10D	40	Cr2,500	Bulky, Fire, 3 AV hits
Rocket Launcher	6	Cr2,000	50/200	5D	1	Cr150	Blast 6, Bulky, 1 AV hit

Support blaster	9	Cr5,000	100/400	6D	100	Cr2,000	Bulky, 2 AV hits
Under-barrel Grenade Launcher	7	Cr1,000	50/200	By grenade	1	-	

Disposable Anti-Vehicle Rocket (TL7): A cheap, one-use, portable rocket launcher. Functions as an armor-piercing rocket, with 2 AV hits against vehicles.

Flamethrower (TL6): Spews a stream of fire 3m wide at its far end. All targets within this cone suffer damage and catch fire. The tank for the flamethrower holds enough fuel for five full attacks and counts as two items for encumbrance.

Fusion Gun (TL14): The advanced development of the plasma gun. This weapon fires plasma bolts undergoing microfusion for massive damage. It uses a back-mounted micro-fusion reactor and thus, for game purposes, has unlimited ammunition. The ammo cost in this case represents purchasing such a backpack. Note that the backpack and gun constitute 4 items in total for encumbrance.

GP Machinegun (TL6): A "General Purpose" belt-fed medium machinegun. Often carried on vehicles as a heavy weapon but is also man portable.

Grav Launcher: Advanced micro-gravitic technology allows this weapon to guide a floating plasma bomb to its target without having to account for ballistic trajectories or inertia. Once launched, the bomb travels 50m per combat round. Its operator can move it in any direction and can also stop it and have it hover in mid-air. Detonation is on command. The bomb's internal battery allows for 10 rounds of gravitic flight.

Grenade Launcher (TL7): Grenade launchers fire grenades over long distances. Grenades for a grenade launcher are not interchangeable with handheld grenades.

Grenade Launcher, Under-Barrel (TL7): this weapon greatly increases the firepower of infantry. The under-barrel grenade launcher can be mounted under most two-handed firearms at TL7 or higher. It is not Bulky and can fire a single grenade before reloading. At TL10+, the weapon has a 3-shot magazine.

Guided Anti-Tank Missile (TL7): this is a portable guided missile system, like the AT-3 Sagger, or present-day Javelin or Eryx. These weapons must be fired from a fixed stationary position. However, the gunner need not be adjacent to the missile's firing position.

Light Assault Gun (TL8): Heavy anti-vehicle rifle firing large armor-piercing shells.

Plasma Gun (TL12): High-energy anti-vehicular man-portable weapon firing magnetically contained plasma bolts. It requires a back-mounted, rechargeable power pack counting as two items for encumbrance purposes.

Rocket Launcher (TL6): Man-portable rocket launcher utilizing unguided munitions. Rocket launchers are unsafe to use in enclosed spaces. Rocket payloads are considered high explosive and are not particularly effective against armored vehicles. Armor piercing rockets cost Cr500 per rocket: trade Blast 6 for 2 AV hits, Blast 1. An anti-aircraft homing missile (2 AV hits) costs Cr10000 and does not suffer a penalty when firing at fast-moving air vehicles.

Support blaster (TL8): Heavy directed-energy man-portable weapon for fire support and light anti-vehicular duties. Its back-mounted power pack counts as two items for encumbrance purposes.



Grenades and Explosives

Throw Athletics/DEX 8+ to accurately throw a hand grenade within effective range, or Heavy Weapons/DEX 8+ to accurately launch a grenade from a launcher. The Effective range for thrown grenades is equal to five times the character's STR. Maximum range for thrown grenades is STRx10.

On a failed grenade attack, thrown grenades will deviate 2D6 + (the margin of failure) meters from its intended target, double that for grenades fired from a launcher. Beyond Effective range a thrown grenade automatically deviates 2D6 - (Effect) meters, regardless of the result of the attack throw.

Throw Demolitions/EDU 8+ to properly set up an explosive charge for simple demolition, or Demolitions/EDU 10+ or greater for more complex jobs, such as setting a directional shaped charge explosive.

Grenade or Explosive	TL	Cost	Dmg	Aspects
Dynamite	4	Cr75	3D	Blast 1D
EMP	8	Cr50	4D	Blast 5, Stun (Machines), Heavy: 2 AV hits
Flashbang	7	Cr30	3D	Blast 10, Stun
Fragmentation	5	Cr30	3D	Blast 5
HEAP	7	Cr50	5D	Blast 1, Heavy: 1 AV hit.
Incendiary	6	Cr30	3D	Blast 3, Fire
Molotov Cocktail	4	Cr5	2D	Blast 2, Fire
Plasma	13	Cr250	5D	Blast 5, Fire, Heavy: 2 AV hits
Plastique	6	Cr200	6D	Blast 10
Smoke	6	Cr15	-	Blast 10 (smoke)

Dynamite (TL4): Low-tech explosive made of nitroglycerin, sorbents (such as powdered shells or clay) and stabilizers. Used for demolition but can also be thrown with a lit fuse as a "grenade".

EMP Grenade (TL8): Electro-Magnetic Pulse grenade emitting a powerful magnetic pulse capable of disrupting electronics but harmless to organic beings. It causes full damage to robots. Characters with implanted cybernetics are vulnerable to EMP but only take half stun damage (rounded up) from it. Non-cybered organic beings are immune to this stun damage. This grenade counts as a heavy weapon (2 AV hits) for the purposes of damaging TL7+ vehicles.

Flashbang Grenade (TL7): Non-lethal stun grenade emitting a powerful flash and deafening noise upon detonation.

Fragmentation Grenade (TL5): Basic anti-personnel hand grenade exploding into a hail of shrapnel.

HEAP Grenade (TL7): High Explosive Armor-Piercing anti-tank grenade using a focused blast to penetrate armor. This grenade can only be fired from a launcher and counts as a heavy weapon (1 AV hit) for purposes of damaging vehicles.

Molotov Cocktail (TL4): Home-made incendiary bomb commonly made from a glass container filled with highly flammable liquid and lit with a fuse.

Incendiary Grenade (TL6): Military-grade fire-bomb grenade.

Plasma Grenade (TL13): A plasma explosive device in a grenade-sized package. This grenade counts as a heavy weapon for damaging vehicles (2 AV hits).

Plastique (TL6): This generic, multi-purpose plastic explosive is a favorite of military units, terrorists, demolition teams and adventurers across known space.

Smoke Grenade (TL6): Deploys a cloud of thick smoke upon impact. Apply DM-1 to all attacks passing through its Blast radius. They also apply a further DM-1 to blaster weapons. The smoke stays in the air for 1D combat rounds.

Gunnery Weapons

The following weapons require a vehicular or fixed tripod mount. They use the Gunnery skill. Consider them as Gunnery Weapons when fired against vehicle armor.

AV Hits represents the number of rolls on the Surface Damage or Internal Damage tables if the weapon penetrates the target. If the weapon causes Critical Damage, roll only once on the Critical Damage table, regardless of how many AV Hits the weapon usually causes.

Direct hits on personnel with Gunnery Weapons are **automatically lethal**, unless the target is wearing TL13 powered armor, in which case, they take the Personal Damage listed here, normally. If the character is in the blast radius of a Gunnery Weapon, apply the Personal Damage normally, and see the rules on **Diving for Cover** in the Personal Combat chapter to maximize chances of survivability.

Gunnery Weapon	TL	Cost	Range	AV Hits	Personal Damage	Aspects
Air-to-Air Missile	7	KCr50/ each	2,000/4,000	3	4D	
Anti-Tank System Missile	7	KCr15	500/2,000	4	6D	Blast 3
Autocannon	6	KCr50	750/1,500	1	4D	Auto 2, Blast 1
Cannon, Light	5	KCr30	500/1,000	1	4D	Blast 2
Cannon, Heavy	6	KCr60	750/1,500	2	5D	Blast 5
Cannon, Advanced	8	KCr120	750/1,500	3	5D	Blast 5
Fusion Gun	13	KCr2,500	3,000/6,000	6	10D	Blast 8, Fire
Blaster Cannon	8	KCr150	1,500/3,000	3	6D	blaster
Blaster Advanced Cannon,	9	KCr100	1,500/3,000	4	6D	blaster
Plasma Cannon	11	KCr750	750/1,500	5	10D	Blast 5, Fire
Railgun	10	KCr75	2,000/4,000	3	8D	Blast 3

Air-to-Air Missile (TL7): this is a radar-guided or heat-seeking missile designed for use in air-to-air combat. TL8+ versions are self-guided suicide drones. These missiles can represent large surface-to-air missile installations as well.

Anti-Tank Missile System (TL7): A larger, vehicle or fixed-mount version of the guided missile heavy weapon, like the modern TOW or Hellfire missile. These missiles are very effective against slower armored vehicles.

Autocannon (TL 6): a rapid-fire cannon in the 20mm-30mm caliber range that is usually found mounted on aircraft and light vehicles. This weapon usually has enough ammunition for 10-20 short bursts.

Cannon, Light (TL5): a vehicle-mounted or towed gun in the 40-70mm caliber range, like the guns mounted on early Second World War tanks. They usually have between 40 and 100 shells in their magazine.

Cannon, Heavy (TL6): this large vehicle-mounted cannon is the main weapon of modern tank designs. This also represents field guns and light indirect artillery.

Cannon, Advanced (TL8): the final evolution of chemically-ignited direct fire heavy guns. Each projectile is an advanced charge that can be set to detonate in the air, upon contact, or designed to self-forge into an armor-piercing penetrator.

Fusion Gun (TL13): a large and bulky high-energy weapon that fires magnetically shaped bolts of plasma undergoing nuclear fusion. This weapon is powered by its own fusion reactor and thus has effectively unlimited ammunition.

Blaster Cannon (TL8): the first battlefield energy weapon. This blaster is more costly than an advanced cannon but has twice the effective range. Unfortunately for its operators, blaster cannons suffer a DM-1 to hit when there is a large amount of particulates in the air.

Blaster Cannon, Advanced (TL9): a fully developed, and thus cheaper, battlefield vehicle blaster. It is still affected by particulates like all blasters.

Plasma Cannon (TL 11): The earliest high-energy weapon on the battlefield. The plasma cannon fires magnetically shaped plasma bolts that release enormous amounts of heat on the target. They are not long-ranged vehicle weapons.

Railgun (TL 10): an answer to newly developed blaster cannon technology, the railgun fires a slug of nickel-alloy at hypersonic velocities. The weapon is cheap and has a very long range.



Environmental Hazards

Not all threats carry weapons. Starfarers must contend with disease, radiation, and extreme environments when exploring distant stars. This chapter provides simple rules for implementing these hazards in your game.

Disease and Poison

When a character is exposed to a disease or poison, they must make an Endurance throw. The target is the pathogen's Virulence number. If successful, the character shrugs off the effect. If the throw is failed, the disease damages the character's Stamina according to the listed damage. The infected character must repeat this throw after the pathogen's listed interval. Success means recovery and failure causes the listed damage, again. If this damage reduces the character's Stamina to zero, additional damage applies to Lifeblood. The character cannot heal any damage until they recover from the illness or poisoning. Note that most poisons do not have an interval, but rather cause their damage immediately upon poisoning and only once.

Sample pathogens

Pathogen	Virulence (END throw)	Damage	Interval
Pneumonia	6+	1D	1D weeks
Anthrax	9+	1D	1D days
Biological Weapon	12+	3D	1D hours
Arsenic	8+	2D	-
Tranq Gas	10+	Unconscious	-

Extreme Temperatures

Extreme environments damage unprotected characters, as noted in the table below.

Temperature	Damage	Example
-100° or less	1D/round	Deep space
-50°	2D/hour	Mars
-25°	1D/hour	Arctic
-10° to 40°	None	Typical Terra
50°	1D/hour	Searing desert
100°	2D/hour	Boiling point
200° or more	1D/round	Mercury

Fire

When exposed to fire, characters must throw DEX 8+ to avoid catching fire. A burning character takes 1D damage per round. Make another DEX 8+ throw each subsequent round; if successful, the character puts out the fire. If failed, the character suffers another 2D damage. Putting out the fire by other means, such as an extinguisher, also stops this continuous damage. Note that space suits, encased armor, and powered armor render their wearers immune to fire damage.

Falling

A character suffers 1D damage per 2m fallen, up to 6D at terminal velocity. Multiply this damage by the world's gravity rating in Gs. For example, falling 10 meters on a world with 0.45Gs would inflict 5D damage, which is then multiplied by 0.45 for the actual damage result – 2.5D rounded up to 3D.

Radiation

A character exposed to radiation accumulates rads. Unless treated with anti-radiation medication, this radiation exposure remains forever. Even after a character has recovered from radiation sickness (see below), accumulated radiation remains. Additional significant exposure will cause more severe sickness as any new exposure accumulates with all previous exposures before determining damage.

Radiation Exposure Levels

Source	Instant (rads)	Extended (rads)	Example
Constant, low	-	1D/hour	Cosmic radiation
Constant, moderate	-	1Dx10/hour	Nuclear fallout
Constant, severe	-	1Dx100/hour	Solar flare
Acute, low	3D	-	Far nuclear blast
Acute, moderate	1Dx10	-	Particle Weapon
Acute, severe	1Dx100	-	Near nuclear blast

Exposure to radiation might lead to radiation sickness, depending on the amount of rads the character has accumulated. Use the disease and poison rules, in conjunction with the table below.

Radiation Sickness.

Irradiation	Total rads	END Throw	Damage	Interval
Mild	99 or less	None	None	None
Low	100-199	5+	1D	1D weeks
Moderate	200-599	6+	1D	2D days
High	600-999	7+	2D	1D days

Severe	1,000-10,000	8+	3D	1D hours
Extreme	10,000 or more	12+	6D	1 hour

Starvation and Dehydration

A character requires two liters of water and 0.5kg of food per day to stay healthy. Special high-tech rations (TL8+) are a lightweight, though unappetizing substitute for food.

A character may go without water for 20 hours + twice their END score with no ill effect. After that time has passed, the character must throw END 6+ per hour without water or suffer 1D damage. There is a cumulative DM-1 with each additional check.

A character may go without food for 3 days. After that, the character must throw END 6+ per day without food or suffer 1D damage. There is a cumulative DM-1 with each additional check.

The character can recover this damage only after drinking and eating.

Suffocation

In cases of insufficient oxygen, such as on a ship with failing life support, characters suffer 1D damage per minute. If the character has no access to any oxygen whatsoever, like when a character is being strangled, or has been sucked out into space, the damage is 1D per round instead.

Vacuum Exposure

Contrary to popular belief, vacuum does not kill immediately. A character exposed to vacuum suffers regular suffocation damage (above). While exposed to space they also suffer 3Dx10 rads of radiation per round. Additionally, beginning from the third round of vacuum exposure, the character must throw END 10+ per round or fall unconscious from aeroembolisms – the formation of air bubbles in their blood stream.

Personal and Vehicle Combat

Spacers and adventurers often run into trouble among the stars. Hopefully, they'll be able to talk and negotiate their way out of problems. However, in many cases they will have to fight, be that for a cause, goal, or for survival. The following rules allow quick resolution of combats.

See the weapon descriptions in the Equipment chapter for various special Weapon Aspects and how to use them with these rules.

Combat Procedure Outline

1. Check for surprise. If one party surprises the other, they gain one free combat round during which the surprised party cannot act.
2. Determine Initiative for all combatants.
3. Start the combat round.
 - 3.1. Combatants act in Initiative order (highest first).
 - 3.2. On their turn, each character has two actions. They may use them for attacks, movement, and other actions. Apply any damage inflicted by an attack immediately.

3.3. Once the combat round is over, begin a new round, until the battle is over.

4. If necessary – triage and treat the wounded.

Combat Rounds

Combat takes place in 6-second segments called Combat Rounds. Characters act in descending initiative order, as discussed below, in each combat round – unless they are surprised or otherwise unable to act.

Surprise

Characters may surprise other parties or be surprised by them. A good tactician or a keen-eyed recon specialist can lay a good ambush or avoid one.

In situations where surprise is possible, each party throws Recon/INT 10+ or Stealth/DEX 10+. If one party succeeds and the other fails, the winner gains surprise. If both sides succeed or both fail, there is no surprise. A party deliberately setting up an ambush gains DM+2 to surprise rolls: ambushes require advanced knowledge of an approaching enemy, which is beyond the scope of the combat rules. Groups in vehicles, or groups of eight or more characters, suffer DM-2 to surprise rolls. Note that the DM-3 unskilled penalty applies here; if no one in a party has the Recon or Stealth skills, the party throws 2D-3 (modified by the higher between their INT and DEX DMs) for surprise.

Surprise grants a free combat round during which the surprising party may act, but the surprised party may not.

Initiative

Once fighting begins, each combatant throws 2D + their Tactics skill (if any) + their INT DM. Record these rolls. In each combat round, characters act from the highest initiative score to the lowest. Note that the DM-3 unskilled penalty applies here; characters unskilled in Tactics throw 2D-3 + INT DM for initiative.

A character with Leadership may throw Leadership/INT 8+ at the beginning of combat; if successful, any characters in their parties may apply the throw's Effect as a skill bonus to initiative. Combatants may only benefit once from this effect. If multiple characters with the Leadership skill are present, only the one with the highest Leadership skill may roll.

Actions and Attacks

Each character has two actions in their turn. Characters may use an action as follows:

Attack: attack as described below.

Charge: run to a single enemy at a range of up to 20m and make a melee attack at DM+2. Characters on Overwatch (see below) being charged at can, of course, react and attack the charging enemy. Characters not on Overwatch also gain a free attack against a charging enemy, but at DM-2.

Inspire: throw Leadership/INT 8+ to add DM+2 to any single character's next throw.

Move: move up to 10m. Alternatively, fall prone or get up from a prone position.

Overwatch: delay your action until an enemy moves through your line of sight or attacks you. When this happens, you may immediately act, regardless of initiative order. You may hold your Overwatch for a number of rounds equal to your END score.

Other Typical Actions include it is impossible to list all potential character actions. Instead, here are a few that can serve as guidelines to assist Referees in determining whether or not whatever the player wants to do is an action or would require more or less time

Drawing and readying a weapon: Calling an artillery strike: Trying to bypass a lock to open a bulkhead door
Piloting a vehicle through difficult terrain: Performing a stunt in a vehicle: Loading a weapon: Forcing open a locked door: Operating sensors

Melee Attacks

To hit in melee (hand-to-hand combat), throw Melee Combat/STR 8+. You may not attack in melee with a long-arm (such as a rifle) unless you use it as a cudgel (2D damage) or as a spear (3D damage with a bayonet). You may attack with a handgun (including shotguns and submachineguns) in melee at DM-2 to hit. Note that if a shield is used with the Overwatch action in combat, the wielder is treated as having partial cover, as noted below. This gives an enemy DM-2 to hit the shielded character in melee.

Frenzy

A character with at least Melee Combat-1 who either kills or disables an enemy in melee combat may move 2m and immediately attack an adjacent enemy. Characters may do so in the same combat action for a number of times equal to their Melee Combat skill.

Ranged Combat

To hit a target in your weapon's Effective range, throw Gun Combat/DEX or Heavy Weapons/DEX (as appropriate) 8+. Beyond Effective range, throw 10+ instead out to maximum range.

Hitting an obscured target (such as behind bushes) is penalized by DM-1; when attacking a target behind hard cover, the penalty is DM-2; and for heavy prepared cover, such as a bunker, attacks are penalized by DM-3.

Attacks on a prone character in ranged combat are penalized by DM-2; attacking a prone character behind cover uses that cover DM instead, with an additional DM-1.

However, if a character enjoys a total cover DM of -4 or more, they themselves cannot make any direct fire ranged attacks. They are completely blocked by their cover. They may still attack, and be attacked, by means of indirect weapons like grenades.

Shooting in darkness incurs DM-2 to hit, while shooting in dim light incurs DM-1 to hit. These penalties can be alleviated by various night vision devices.



Ranged Combat DM Table

Condition	DM
Target obscured (smoke, foliage)	DM-1
Target behind hard cover	DM-2
Target in heavy cover	DM-3
Target running (double move on its previous round)	DM-1
Target behind total cover	DM-4; direct fire impossible
Target prone	DM-2
Target prone behind cover	Cover DM and an additional DM-1
Darkness	DM-2
Dim Light	DM-1
Target dodging (optional rule)	DM-target's Gun Combat skill

Aiming

An aimed shot requires two consecutive actions and grants DM+1 to hit. A character may use their first action in a combat round to aim, then enjoy DM+1 to hit when firing on the second action. Alternatively, it is possible to begin aiming as the second action in one round and continue aiming through the first action of the next round, and then make an attack with the second action of that second round. The maximum +Dm achievable by aiming is +3.

Automatic Weapons

Automatic weapons fire multiple rounds with every pull of the trigger, filling the air with a hail of bullets. A weapon with the Auto aspect can make attacks in three fire modes: single, burst, and full auto, as described below.

Single: Attacks are made using the normal combat rules.

Burst: Add the Auto score to damage. This uses a number of rounds equal to the Auto score.

Full Auto: Make a number of attacks equal to the Auto score. These attacks can be made against separate targets so long as they are all within six meters of one another. Alternatively, use Full Auto for Suppression fire (see the Combat section). Full auto uses ammunition equal to three times the weapon's Auto score. A weapon cannot use the Auto aspect with the Scope accessory or Aiming action. You may only perform one Full Auto attack in a given round.

Suppressive Fire

Instead of shooting a target, a character may fire an automatic weapon to deter enemy action in each area. Choose a 3m-by-3m area within effective range. Any combatants who move through this area, or caught in this area, suffer an automatic attack. However, do not apply the shooter's Gun Combat skill to this attack and apply a further DM-2 to it. Thus, such shots hit a suppressed target in Effective range on 10+, or 12+ while in cover – combatants under suppressive fire better keep their head down! This continues until the weapon runs out of ammo or until the shooter's next round. This consumes ammunition equal to three times the weapon's Auto rating.

You may only perform one Suppressive Fire action per round.

Thrown Weapons

Thrown weapons have an Effective range of five times the thrower's STR characteristic; the Maximum range is twice that. Throw Athletics/DEX 8+ to hit with a thrown weapon at Effective range, or 10+ beyond it.

Throw Athletics/DEX 8+ to accurately throw a hand grenade at effective range, and 10+ to place a grenade on target at maximum range. Hand grenades. On a failure, the grenade will land 2D6+ (the margin of failure) meters from its intended target. At maximum range, thrown grenades automatically deviate 2D6 - (Effect) meters.

Blast Effects and Diving for Cover:

Modern weaponry includes a wide variety of highly lethal explosive devices, like grenades (see above) and Gunnery weapons. Weapons with the Blast Weapon Aspect do their full damage to everyone within the blast radius. It is possible to reduce this damage by Diving for Cover. The character flings themselves down onto the ground: reduce damage by half, before applying armor. If there is sufficient cover readily available, the character can dive behind it and take only 1D damage before applying armor. What constitutes sufficient cover depends on the explosion and the Referee's call. A foxhole or slit trench might be sufficient to avoid grenade blasts altogether. Hiding behind a low brick wall might only serve to increase the amount of shrapnel from an exploding artillery shell. Fusion guns tend to ignore most types of matter. The Referee is the final arbiter in these situations. In any case, a character that dives for cover forfeits their next action.

Grappling

A character can attempt to wrestle or grab another person instead of hitting them. The attacker must move to melee combat range and beat their target in an opposed Melee Combat throw. If the attacker wins, they may do any one of the following:

- Knock their opponent prone.
- Disarm their opponent. If the attacker succeeds with an Effect of 6+ they can take the weapon for themselves; otherwise, it ends up on the floor.
- Throw their opponent up to three meters for 1d6+STR DM damage.
- Inflict damage equal to 2 + the Effect + STR DM. Grapple damage ignores armor except for Encased Armor Suits, Powered Armor, and Hostile Environment Spacesuits.
- Escape the grapple and move away (as if with a normal movement action).
- Continue the grapple with no other effects.
- Drag or push their opponent up to three meters.

Throwing an opponent always ends the grapple. When using any of the other options above, the winner of the opposed test can choose to end or continue the grapple as they see fit, even if they did not initiate it. A character in a grapple cannot move or do anything other than make opposed Melee checks. Each time an opposed check is made the winner can choose an option from the above list. A character who won the grapple in the previous round enjoys DM+1 to the next grapple; this is not cumulative regardless of the number of grapples they have successively won.

Damage and Healing

To determine the amount of damage a successful hit inflicts, check the weapon's damage rating. Each weapon has a number of damage dice: roll them, add the attack throw's Effect. In melee attacks or when using thrown melee weapons, add the character's STR DM to the damage (for a minimum of 1 damage in case of a negative STR DM). This is the damage inflicted on the character.

Armor

	None	Leather Jacket	Bullet Proof Vest	Heavy Ballistic	Space Suit	Heavy Duster	Encased or synth silk	Powered Armor
Natural Weapons	0	-1	-2	-3	-3	-2	-4	-5
Bludgeoning Weapons	0	-1	-2	-3	-3	-2	-4	-5
Slashing & Piercing Weapons	0	-1	-3	-2	-2	-3	-3	-5
Slug Weapons	0	0	-1	-3	-3	-1	-3	-5
Assault Weapons	0	0	0	-1	-1	0	-2	-4
Blaster Weapons	0	0	-2	-2	-2	-2	-3	-5
Heavy Weapons	0	0	0	0	0	0	-1	-3

The above modifiers are penalties to hit. All other modifier DMs to hit, like Cover and Darkness, apply as usual. Under this optional rule, of course, armor does not reduce damage; any hit causes regular damage dice without any reduction.

Weapon Notes

Shotguns (+2) against jack or less in effective range. Treated as a slug weapon.

Natural Weapons include Hands, Claws, Teeth, Horns, Hooves, Stingers, and Thrashers, or any similar bodily weapon.

Bludgeoning Weapons include Clubs, Batons, and so on.

Piercing Weapons include Bayonet, Spear, Halberd, Pike, Foil, Bows, and similar.

Slashing Weapons include Dagger, Blade, Cutlass, Sword, Broadsword, etc.

Slug Weapons include Body Pistol, Handgun, Revolver, Carbine, Shotgun, SMG, and similar light small arms.

Assault Weapons include Rifles, Assault Rifles, Gauss Rifles, Pulse Rifles, Light Machine Guns, and similar rifle-scale small arms.

Blasters include all blaster-based weapons, including Blasters.

Heavy Weapons include GMPGs, explosives, Plasma Weapons, Fusion Weapons, and similar heavy heavy weapons.

Applying Damage

Spaceships & Star Systems uses two attributes to denote a character's resistance to damage. The first is Stamina, which represents the character's toughness and ability to shrug off minor wounds. Lifeblood is the character's health: loss of Lifeblood represents more serious damage.

After any successful attack, apply damage, after first subtracting armor. All damage is first applied to the target's Stamina. After Stamina reaches zero, any excess or additional damage is then applied to the target's Lifeblood.

Knockdown

If a character receives more damage, before armor is applied, in one round than double their DEX score, they are knocked prone. This rule applies even when the character otherwise receives no damage at all thanks to armor. Characters in Powered Armor quadruple their DEX for calculating their knockdown threshold.

Wounds

If Stamina is above zero, the character is not wounded, only bruised, or scuffed. No negative effects apply to the character in this case.

If the character suffers Lifeblood damage, but their Lifeblood is **above one half its full rating**, the character suffers a **Minor Wound** and applies DM-1 to all actions until healed.

If Lifeblood falls below half its full rating, the character is **Seriously Wounded**; they must throw END 8+ or fall unconscious for 1D hours. Upon waking, the character suffers DM-2 to all actions until healed. The character will require medical care to recover any further.

Characters suffer a **Mortal Wound** if their Lifeblood reaches zero. A mortally wounded character will die within 1 hour unless they undergo Trauma Surgery, as described below. In extreme cases, when the character suffers massive damage, the Referee may declare that they die immediately.

Healing and Medical Care

Stamina recovers on its own to its full rating within 10 minutes after combat. A character's stamina recovers even if they have received Minor Wounds. Stamina does not recover for characters who receive Serious or Mortal Wounds.

Minor Wounds require treatment by a character with at least Medicine-1, a Medkit, and 30 minutes of time. With either Medicine-1 or a Med Kit, rather than both, treatment will take 1 hour. Alternatively, characters will recover from all Minor Wounds on their own after a full day's rest. This will restore the character's Lifeblood to its full rating.

Serious Wounds require a medical facility—a standard starship medbay will suffice—and treatment by a nurse or a physician (Medicine-2 skill or better). Recovery takes 1 day per point of Lifeblood below half the full Lifeblood rating. Once the character's Lifeblood reaches half its full rating, the character will recover the other half within another day of treatment.

Mortal Wounds require **Trauma Surgery**, as noted below.

Trauma Surgery

The key to trauma surgery is to bring the mortally wounded character to a hospital within the "Golden Hour" of trauma medicine – that is, within one hour after receiving mortal injury. Even with advanced first aid, critically injured characters whose Lifeblood was reduced to zero will not survive without trauma care after an hour of injury.

Ordinary medbays common on most starships will usually not suffice – a dedicated hospital or automed whether shipboard or planet-side, is the only facility capable of performing such medical operations safely. If no hospital is reachable within one hour, a character with the Medicine skill may attempt field surgery, but, as noted below, this applies a significant penalty to the roll. Also note that characters killed by vehicle-scale or starship-scale weapons cannot be resuscitated.

Once on the operating table, the surgeon treating the critically injured character throws 2D + their Medicine skill, modified by the DMs below, and consults the following table.

Trauma Surgery Table

2D	Result
5-	Death
6-7	Significant internal damage
8-10	Radical measures required
11+	Normal recovery

Trauma Surgery DMs:

DM-2 if no first aid provided within 10 minutes of the injury.

DM-2 if operating in a ship's med bay, and not a proper hospital.

DM-4 if operating under unsuitable field conditions.

DM-2 if treated with TL6 equipment-; **DM+2** if treated with TL12+ equipment.

DM-2 if Mortally Wounded by an explosion.

DM-2 if patient has END 5-, **DM+2** if patient has END 10+.

Trauma Surgery Results

Patient is dead: character dies on the operating table. No further resuscitation attempts possible. However, see Cyborg Conversion and Bio-Reconstruction, in Appendix XX.

Significant internal damage: multiple organs severely damaged. Permanently subtract 1D from each physical characteristic. If any of them reaches zero or less, the character dies.

TL9+ vat-grown or cybernetic organs restore full functioning and costs 1D x 2500 Credits – no throws required.

Radical measures required: Throw 1D:

1: internal organ removed. Permanently reduce one physical characteristic by 1D. Character dies if it reaches zero or less.

TL9+ vat-grown or cybernetic organ restores full functioning and costs Cr2500 – no throws required.

2-3: leg amputated. Movement halved (given a crutch) and the character may either act or move during a given round.

See the Cybernetics section of the Equipment section for replacement options.

4-5: arm amputated. The character obviously cannot use this arm for any purpose.

See the Cybernetics section of the Equipment section for replacement options.

6: eye removed. DM-2 to all actions requiring one eye, including all attack throws.

See the Cybernetics section of the Equipment section for replacement options.

Normal recovery: heal as normal for a Seriously Wounded character.



Vehicle Combat

Sometimes, characters will find themselves operating a vehicle in combat, or facing enemy vehicles. The following rules allow the inclusion of vehicles in personal combat, as well as vehicle chases. They are not intended to serve as war-gaming rules for large engagements.

Vehicle Movement

In tactical (non-chase) combat, a vehicle moves on its driver's initiative. Apply the vehicle's Agility as a DM to the driver's initiative.

In personal combat, a vehicle can move up to 20m in a single round. This is considered cautious combat movement. This represents a vehicle advancing slowly through terrain to engage personnel and other vehicles at so-called “knife-fighting” ranges and speeds. Fast-moving vehicles will pass through the tactical battle area in a round, or less. The chase rules below are designed to handle such high-speed combats. An exception would be a one-time intervention of a fast vehicle in tactical combat, such as an armed aircar doing a quick blaster strafe of enemy positions during its pass through the area.

Chases

The tactical combat rules represent action in small, limited areas. For vehicles, this means short range and slow speeds. As noted above, a fast-moving vehicle will easily pass through the entire tactical combat map in less than one combat round. This is unsuitable for chases and dogfighting. Use these rules instead in such cases. They are designed to be highly descriptive in their approach to vehicle combat. It will be up to the Referee and the players to describe how the action unfolds as the participants maneuver, jockey for position, and attack each other.

Chase turns are an abstraction in combat and vary in length depending on circumstances, from mere seconds in high-speed aircraft pursuits to hours in long drawn-out submarine duels. The Referee should inform the players of how long each chase combat turn is at the start of the chase.

There is no initiative throw in chases. Instead, at the start of each turn both participants throw 1D + the relevant Vehicle Skill + Attribute DM + the vehicle's Agility. The pursuer wins on ties. The attribute DM used in vehicle chases depends on the vehicle and context: most high-speed chases would use the DEX DM, while a fleet duel might use INT or EDU—perhaps depending on the Tech Level, ranges, and vehicles involved.

The result of the 1D + Attribute DM + Vehicle Skill + Vehicle Agility is called the Position.

The participants in a chase can only attack those targets at an equal or lower Position. They may attack using the normal vehicle attack and damage rules, with the following modifiers based on the relative Position between the attacker and target.

Position Attack DM Table

Attacker is	DM to Attack Throws
In the same Position as the target	DM-2
1 or 2 Positions higher than the target	DM-1
3 or 4 Positions higher than the target	DM 0
5 or more Positions higher than the target	DM+1

Those vehicles in lower Positions cannot attack any vehicle with higher Position for that turn unless their vehicle has a turret-mounted weapon. Turret attacks made from a worse Position suffer DM-3 to hit. Note that there is no range tracking in these vehicle chase rules. This is intentional. The attack DM penalty for low-relative Positions reflects a bad angle of attack, or sub-optimal range for an attack, such as getting an enemy on your tail in aircraft dogfighting.

It is possible to have multiple parties engaged in a chase. Simply record the different Position results in descending order. The vehicles higher on the “ladder” may attack any vehicle below them, subtracting Positions to determine their Attack DM. This can be used to great effect in a dogfight, below.

Chases last five turns. At the end of the fifth turn, if the prey has not been stopped, disabled, or destroyed, the prey escapes and the chase ends.

Dogfighting

In a dogfight, two or more highly maneuverable vehicles, such as aircraft or grav vehicles, try to outmaneuver and fight each other. A dogfight usually has no time limit, barring fuel considerations. The dogfight ends either when one participant is disabled or destroyed, or if one participant disengages. To disengage from a dogfight, a participant must use an action that turn to throw Opposed Vehicle Skill/DEX, including the DM for the vehicle’s agility. The vehicle with superior Position gains Advantage on the skill check. If the pilot that initiated the disengagement attempt was successful, they have managed to end the dogfight, and cannot be attacked without first being chased down and re-engaged. For example, a fighter aircraft can break off the fight, and will be free to go its way unless its opponent gives pursuit.

Foot Chases

Chases on foot use similar rules. Each turn, each side throws opposed Athletics/DEX skills and records the result as their Position. The pursuer wins on ties. The winner of this opposed throw may attack in melee or ranged combat, at the Referee's discretion, while the loser cannot attack in that turn. Use the same Position Attack DM table as vehicle chases. Foot chases end in the same way that other chases end, that is, either when the pursuer subdues the prey or gives up the chase, or after five turns, when the prey escapes. Referees should track the number of turns and remember to consider Fatigue effects, if the situation calls for it.

Possible Vehicle Maneuvers: Chases

Evasive Maneuvers: To make it as difficult as possible to hit their vehicle, the pilot may attempt Evasive Maneuvers on their action. Throw Vehicle Skill/DEX 8+ to gain the pilot’s Vehicle skill as a negative DM to attacks made until their next turn.

Better Position: While it is not normally possible to re-roll the Position throw in a round, it is possible to perform maneuvers to help ensure that your vehicle might be in a better Position next turn. For their action, the pilot of a vehicle may roll Vehicle Skill/DEX 8+ to gain a +1 bonus to next round’s Position throw. Note that it is possible for one vehicle to aid another allied vehicle to gain a Better Position on an enemy vehicle (see *Collaboration* in the Basic Rules chapter).

Obstacle Course: This risky maneuver is a good choice for agile vehicles desperate to get away from more heavily armed pursuers. The driver/pilot chooses an Obstacle Number, and then throws Vehicle Skill/DEX vs the Obstacle Number chosen (include the vehicle’s Agility score). If the throw fails, the vehicle crashes and is Knocked Out (see Vehicle Penetration and Damage, below) and everyone on board takes 3D damage. If the throw is successful, then the vehicle performing the maneuver can leave the chase, unless the pursuing vehicles opt to throw Vehicle Skill/DEX against the same Obstacle Number the first vehicle chose. If they fail, they crash and are Knocked Out. If they succeed, they continue the chase. If they do not opt to throw the Obstacle Number test, then they are out of the chase.

Ramming: For reasons we will not explore here, deliberately ramming another vehicle is a staple of gaming. In tactical combat, performing a ram requires one action by the vehicle pilot. The pilot must throw Vehicle Skill/DEX 8+ to hit a stationary target in combat. If the target is moving, the throw is opposed Vehicle/Skill/DEX. In both cases, add the Agility scores of the vehicles involved. Ramming a stationary vehicle outside of combat is automatically successful. However, if the ram is intended as a first strike, roll to determine Surprise, as normal. Characters who are not surprised

may dive for cover to avoid taking damage. Vehicle crews that are not surprised may attempt to evade, making the ramming attack an opposed Vehicle Skill/DEX throw.

In a chase, performing a ram requires that the ramming vehicle have superior Position on the target. Rams cannot occur between two vehicles with the same Position. Ramming a target is an opposed Vehicle/DEX throw, where the vehicle with superior Position gains Advantage on the throw. Apply Agility and Position DMs to the throws. Chases assume that both vehicles are moving.

In both tactical and chase combat, see the collision damage rules below.

Collisions:

Characters hit by vehicles travelling at high speeds take 6D damage, subtracting armor. Referees may want to adjust damage to reflect extremely large (8D+) or very small vehicles (4D).

Vehicles that suffer uncontrolled high speed collisions or crashes are Destroyed, as per the Critical Damage table.

If a character is attempting to control a crash, Referees can assume that the vehicle will be Knocked Out, and that characters inside suffer damage accordingly.

Vehicles performing a ram on a target should use the following table to determine damage. If a ramming vehicle is significantly larger than the target vehicle, is travelling at significantly higher relative speeds, or is specifically fitted with a ram, treat the ramming vehicle as having one level higher armor than listed, and read off the next lower row.

Vehicle Collision Damage Matrix

	Target Vehicle:		
Ramming Vehicle:	Unarmored	Light Armor	Heavy Armor
Unarmored	Surface	None	None
Light Armor	Internal	Internal	Surface
Heavy Armor	Critical	Critical	Internal
Heavy w/Ram	Destroyed	Destroyed	Critical

Attacking Vehicles

When using a vehicle-mounted heavy weapon in tactical combat—not a chase—throw Heavy Weapons/DEX 8+ to hit a target in Effective range and 10+ to hit a target beyond it and up to its maximum range. Apply normal ranged combat modifiers to this roll. The Referee might rule that some heavy weapons ignore otherwise good cover (DM-2). Treat as target obscured (DM-1).

Throw Gunnery/DEX 8+ to hit a target with vehicle-mounted gunnery weapons at the Gunnery Weapon's Effective range in tactical combat. Beyond Effective range, this throw becomes Gunnery/Dex 10+. Gunnery Weapons have very long ranges and for typical tactical engagements, Gunnery weapon targets will almost always be within Effective range. Hitting a human-sized target with a Gunnery weapon is penalized at DM-2.

Small arms and heavy weapon attacks on a stationary vehicle enjoy DM+1 due to the target's size. Small arms and heavy weapon attacks on fast moving ground vehicle targets, or slow moving aircraft, helicopters, or grav vehicles are penalized by DM-2. Note that in many cases, attacks on aircraft are made beyond Effective range, meaning that the base difficulty for most personal attacks against slow-moving aircraft will be 12+.

Small arms and ground-fired Heavy weapons cannot hit fast-moving or high-altitude aircraft. There are a number of specialized anti-aircraft weapons available in the Equipment chapter.

Personal weapon attacks **from** a fast-moving vehicle, like a gunman firing a pistol out of the window of a moving car, are penalized by DM-2. This penalty is cumulative with attacking a fast-moving target, such as shooting your submachinegun from one moving vehicle at another moving vehicle. Note that this penalty applies in the Chase combat rules for vehicles as well.

At TL7+, Heavy and Gunnery weapons mounted on military vehicles use targeting computers and stabilization, and do not suffer the DM-2 for attacking **from** a fast-moving vehicle. Nor do such vehicles suffer penalties when firing **at** moving vehicles—in such a situation, the Referee should probably be using the Chase rules, where Position accounts for relative speed penalties.

A gunner may aim for a specific location on a target vehicle. Penalize the attack by DM-4. If the attack is successful and penetrates doing at least Internal Damage, it damages the called location. Otherwise, the shot misses completely.

Vehicle Combat Modifiers Table

Tactical Combat Condition	DM
Beyond Effective Range	DM-2
Attacking human sized target with Gunnery weapon	DM-2
Attacking from moving vehicle – unstable firing platform (applies to Chase combat as well)	DM-2
Attacking from moving vehicle, TL7+ (military vehicles)	DM+0
Attacking stationary vehicle	DM+1
Attacking fast moving ground target	DM-2
Attacking slow-moving aerial target	DM-2
Attacking fast-moving aerial target from the ground without specialized anti-aircraft equipment	Not Possible
Aiming for a specific location on a target vehicle	DM-4

Vehicle Penetration and Damage

When an attack hits a vehicle, refer to the **Vehicle Penetration Matrix Table** below and roll on the damage tables as indicated by that matrix. If an attack hits with an Effect of 6 or more, shift one column to the left to determine the damage. Note that if a given weapon does not have any AV hits listed in its description, it has 1 AV hit roll.

Vehicle Penetration Matrix Table

	Unarmored	Light Armor	Heavy Armor
Small Arms	Surface	None	None
Heavy weapon	Critical	Internal	Surface
Gunnery Weapons	Destroyed	Critical	Internal

Surface Damage Table

2D	Damage
5-	Bounce Off
6-7	Device
8-9	Locomotion
10	Breach
11	Weapon
12+	Internal Damage



Surface Damage Table Results

Bounce Off: The attack has bounced off the vehicle's skin or armor. No damage.

Device: One secondary external device, such as externally mounted cargo, a headlight, or antenna, is destroyed (Referee's discretion).

Locomotion: The vehicle's means of locomotion or engine is damaged.

First Hit: halve the vehicle's speed.

Second Hit: The vehicle's locomotion is disabled, and it cannot move. In case of aircraft or high-flying grav vehicles, this might cause a crash; throw Aircraft/DEX 8+ or Grav Vehicle/DEX 8+ respectively to land safely. Otherwise, the aircraft crashes: roll on the Critical Damage table

Breach: If the vehicle is pressurized, its environmental seal is breached, exposing its occupants to the environment. Patching an environmental seal breach requires pre-packaged emergency hull patches. Most sealed vehicles carry 1D hull patches, which may be used within one combat round of sustaining the damage; alternatively, sealing the breach requires Repair/INT 6+ throw and 1D minutes.

Note that a breached watercraft begins to leak. This reduces its speed by one quarter and reduces vehicle Agility by -1. Four breaches will cause the watercraft to take in too much water and sink. This only applies to small watercraft; large ships such as steamships and larger vessels stay afloat despite such minor breaches—they have compartmentalized hulls designed to prevent small breaches from sinking the whole ship. Only a Knocked Out critical result (see below) will sink large craft.

Weapon: One of the vehicle's weapons is disabled and may not fire. Determine which weapon randomly. Throw Repair/INT 8+ or Gunnery/INT 10+ to repair a disabled weapon. Subsequent hits against the same disabled weapon will damage the weapon to the point where it cannot be repaired in combat. If the vehicle survives the encounter, roll 1D: 1-3; the weapon is repairable, 4-6; the weapon is destroyed and must be replaced.

Internal Damage: The vehicle suffers an unlucky penetrating hit! Roll on the Internal Damage table!

2D	Internal Damage
4-	Breach
5	Cargo
6	Occupants
7	Weapon

8-9	Locomotion
10	Electronics
11	Power Plant
12	Critical

Breach: If the vehicle is pressurized, its environmental seal is breached, exposing its occupants to the environment. Patching an environmental seal breach requires pre-packaged emergency hull patches. Most sealed vehicles carry 1D hull patches, which may be used within one combat round of sustaining the damage; alternatively, sealing the breach requires Repair/INT 6+ throw and 1D minutes.

Note that a breached watercraft begins to leak. This reduces its speed by one quarter and reduces vehicle Agility by -1. Four breaches will cause the watercraft to take in too much water and sink. This only applies to small watercraft; large ships such as steamships and larger vessels stay afloat despite such minor breaches—they have compartmentalized hulls designed to prevent small breaches from sinking the whole ship. Only a Knocked Out critical result (see below) will sink large craft.

Cargo: 1 ton of randomly determined cargo is destroyed. If no cargo remains, treat this as an Occupants result.

Occupants: 1D hits injure random vehicle occupants: crew or passengers. Each hit inflicts 3D damage. If there are fewer occupants than the rolled number of hits, distribute the hits randomly between the remaining occupants, which means that an occupant may suffer a double hit. Subtract personal armor from this damage if applicable. If the pilot suffers a hit and falls unconscious, a flying or fast-moving vehicle will crash (roll a Critical Hit) unless another character with the appropriate skill can grab the controls within one combat round; alternatively, in TL7+ vehicles the autopilot can take over; however, autopilots always lose Position chase throws.

Weapon: One of the vehicle's weapons is disabled and may not fire. Determine which weapon randomly. Throw Repair/INT 8+ or Gunnery/INT 10+ to repair a disabled weapon. Subsequent hits against the same disabled weapon will damage the weapon to the point where it cannot be repaired in combat. If the vehicle survives the encounter, roll 1D: 1-3; the weapon is repairable, 4-6; the weapon is destroyed and must be replaced.

Locomotion: The vehicle's locomotion or engine is damaged.

First Hit: halve the vehicle's speed.

Second Hit: The vehicle's locomotion is disabled, and it cannot move. In case of aircraft or high-flying grav vehicles, this might cause a crash; throw Aircraft/DEX 8+ or Grav Vehicle/DEX 8+ respectively to land safely. Otherwise, the aircraft crashes: roll on the Critical Damage table

Electronics: One of the vehicle's electronic systems is destroyed: usually the computer systems or major sensors/radar. Flying an aircraft or Grav vehicle with damaged electronics incurs a DM-2 penalty to all vehicle throws.

Power Plant: The vehicle's power plant takes a direct hit.

First Hit: the power plant is damaged; halve the vehicle's speed (cumulative with Locomotion damage). The vehicle cannot fire energy weapons and move in the same round.

Second hit: the power plant is destroyed; the vehicle is immobilized and cannot use electronics or energy weapons. Aircraft or grav vehicles may crash: throw Aircraft/DEX 8+ or Grav Vehicle/DEX 8+ to land safely, otherwise roll on the Critical Damage table.

Critical: The vehicle suffers massive internal damage. Roll on the Critical Damage table below.

Critical Damage

2D	Critical Damage
6 or less	Knocked Out
7-9	Crew Hit
10 or more	Destroyed

Knocked Out: The vehicle is seriously damaged and inoperable until it undergoes major repairs at a full-scale workshop. Each occupant must throw END 6+ to avoid taking 3D damage. Aircraft and grav vehicles at high altitudes crash, causing 6D damage to all occupants. Low-flying vehicles crash, causing 3D damage to all occupants. Subtract personal armor from this damage if applicable. Watercraft, including large vessels, suffer a massive hull breach. They will sink within 1D combat rounds.

Crew Hit: All crew and passengers suffer 4D damage each. Personal armor reduces this damage accordingly.

Destroyed: The vehicle is destroyed with the loss of all hands. In the case of ground vehicles, occupants may throw DEX 8+ to bail out unscathed; failure causes 5D damage.

Repairs

Throw Repair/INT 8+ to jury-rig a damaged or disabled system back to functional status with a handful of spare parts. These repairs are temporary. The system will stop functioning again after 1D hours. Breaches are easier to repair, as noted above.

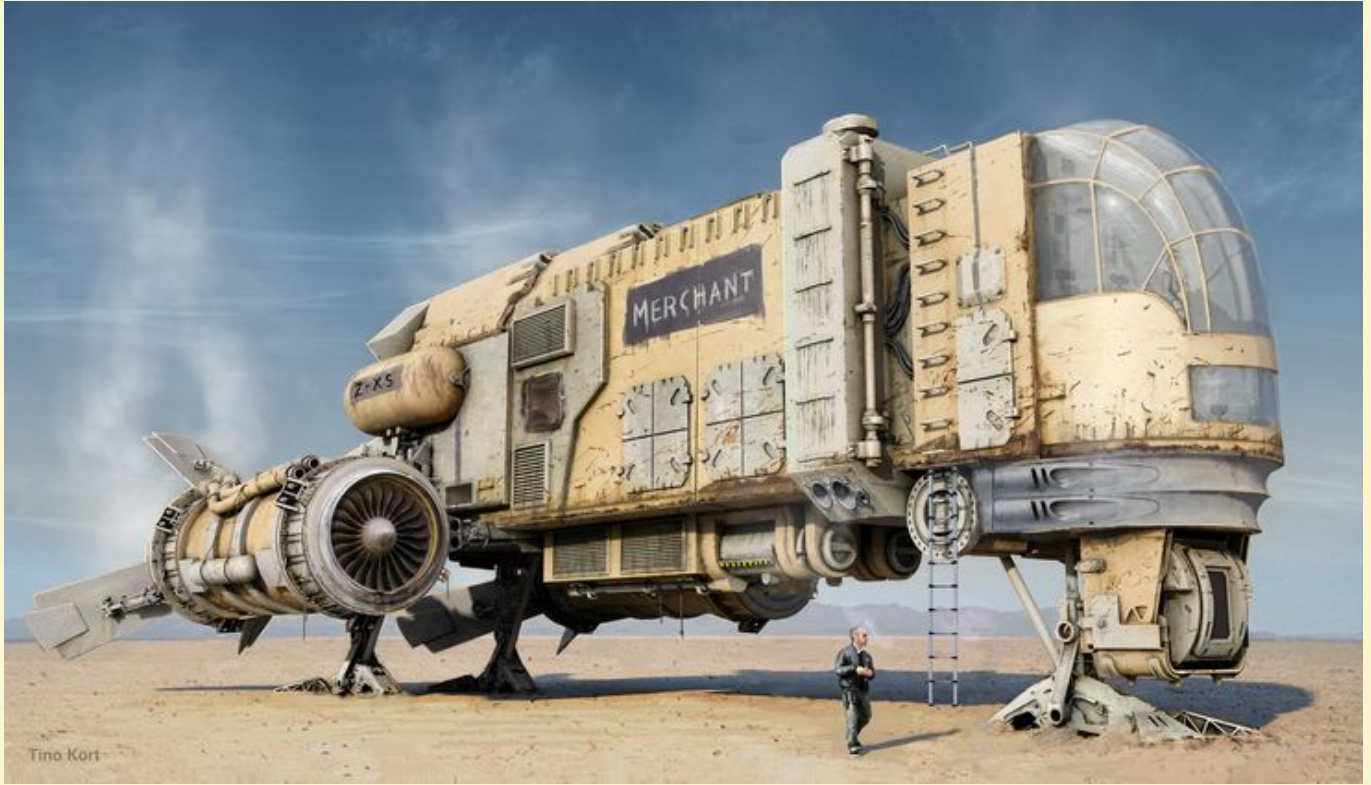
Properly repairing a disabled system costs 2D6×10% of the system's original cost. Throw Repair/INT or Repair/EDU 10+ to repair the system in the field using spare parts. If this throw is unsuccessful, the damage requires a workshop to repair. Unless the Referee decrees that the vehicle itself is damaged beyond repair, a character with at least the Repair 1 skill will be able to replace or repair the system, at this cost, at a properly equipped workshop.

Ground Force Weaponry against Starship-scale Targets

All spacecraft are immune to Small Arm fire. Heavy weapons that hit a space craft of any size cause no damage. Gunnery weapons are significantly more dangerous. They can harm small craft of 99 or smaller tons: Gunnery weapons inflict one Internal hit on a successful attack. Against ships between the 100-999-ton range, Gunnery weapons inflict one Surface hit. Spacecraft of 1000 or more tons are immune to non-specialized ground weapons. Gunnery weapon hits on a spaceship of any size with an armored hull cause no damage.

Starship-Scale Weaponry against Vehicle Targets

Civilian ship blasters are considered Gunnery Weapons vs. vehicles. Civilian ship missiles are considered Heavy weapons but cause 1D AV hits when penetrating vehicle armor. Any heavier starship weapons will destroy any vehicle on a successful hit. Any starship weapons will utterly vaporize human-sized targets.



Tino Kort

Starship Operations

The stars await! Adventurers ply the star-lanes and boldly venture into the unknown; others may serve in a space fleet, hunting pirates, or raiding enemy shipping. Still others may mine asteroid belts for valuable ores, smuggle goods to distant planets, or even engage in piracy. This chapter covers interplanetary and interstellar travel, as well as starship operations and procedures.

Interplanetary Travel

Starships and other spacecraft in Spaceships & Star Systems have gravitic drives with an acceleration rating from 1G to 6Gs. Ships normally travel under full acceleration halfway to their destination, then decelerate for the other half of the journey. The Grav drive focuses the graviton beam on a spot in space outside the ship and that is where the gravity well is created. The ship is pulled towards the spot and as the ship moves the focus of the graviton beam moves likewise. Making for a continuous free fall into the gravity well.

For precise axis control a ship uses what is called, thrusters. These are EM based and only require power from the ship's powerplant. During real space travel thrusters are used to change the orientation of the ship while making course changes along with the Grav drive. They are also used for the final stages of docking and fine positioning on a landing pad. The following table presents abstracted in-system travel times according to the ship's acceleration. The formula is: $T = 2 \cdot \sqrt{D/A}$ where T = Time in seconds, D = Distance in meters, A = Acceleration in G's (1G=10 meters per second, 4G=40 meters per second, etc) and assumes deceleration from the midpoint.

Common interplanetary travel times by acceleration

Destination	1-G	2-G	3-G	4-G	5-G	6G
Planetoid Jump Point	10m	7m	6m	5m	5m	4m
Ground to Planetary Orbit	33m	23m	19m	16m	14m	13m
Ground to Typical Planetary Jump Point	5h, 30m	4h	3h	3h	2h, 30m	2h
Small Gas Giant to Jump Point	12h	8h	7h	6h	5h, 30m	5h
Large Gas Giant to Jump Point	17h	12h	10h	9h	8h	7h
Planet to Close Neighbor	1d, 13h	1d, 2h	22h	19h	17h	15h
Planet to Far Neighbor	3d, 17h	2d, 15h	2d, 3h	1d, 20h	1d, 16h	1d, 12h
Mainworld to Close Gas Giant	5d, 16h	4d	3d, 7h	2d, 20h	2d, 13h	2d, 8h
Mainworld to Far Gas Giant	6d, 23h	4d, 22h	4d	3d, 11h	3d, 3h	2d, 20h

Travel times are abstracted and, as noted above, generally assume constant acceleration up to the halfway point and then constant deceleration down to the destination. Ships intending to jump will not decelerate towards the jump point.

Interstellar Travel

Interstellar travel in Spaceships & Star Systems uses a faster-than-light engine called the Jump Drive. Jump Drives are rated according to the maximum range in parsecs (represented on the star map as hexagons) they may travel in a single jump. Jump-1 drives can propel a vessel to an adjacent hex, while Jump-3 drives will move a ship up to three hexes. A single voyage through jump-space takes 1 week regardless of the distance traveled. Jump drives are safe to use only at a certain distance from a planetary or stellar body. This is called the Jump Point or Jump Distance. A jump requires an amount of liquid hydrogen catalyst equal to 10% of the ship's volume per parsec traveled. For example, a 200-ton ship making a 3-parsec jump would use 60 tons of L-Hyd.

The jump drive propels the ship into a parallel dimension, called Jump Space. The jump catalyst serves to envelope the ship with a hydrogen bubble, at a distance of approximately 1m in every direction from the hull – the so-called "Jump Bubble" – to protect it from the alien nature of Jump Space. Characters can safely go on EVA within the bubble but will be lost if they leave it and enter real, unprotected Jump Space – even if still tethered to the ship. No matter the ship's velocity and direction when entering Jump space, upon returning to normal space the ship takes on the direction and speed of the majority of matter within 1 light year. (Usually this means you are stationary in relation to the system's star)

Interstellar Jump Procedure

1. **Calculate Plot:** A jump requires a course calculation called a "jump plot". Starports rated D or better sell up-to-date jump plots to nearby populated worlds for Cr1,000 per parsec. A skilled pilot can also calculate their own jump plot. Throw Piloting/EDU 6+ to calculate a jump plot, apply a negative DM equal to the number of parsecs the jump will travel; this takes 1Dx6 minutes (i.e., 1D ship combat turns). It is possible to rush this calculation, to guarantee that it will only take one ship combat turn, but the throw is Piloting/EDU 10+. A failed check requires another attempt, or the ship will misjump (see below). It is possible to calculate a jump plot in advance, but it will become obsolete within 1D days.
 - DM+the Effect of the Engineering throw to Engage the Drive
 - DM-1 per day the jump plot is out of date
 - DM-2 if the Jump Drive is damaged.
 - DM-2 if using Unrefined catalyst.
 - DM-8 if within a hundred-diameter limit of the nearest planet or star (Not at a jump point)
2. **Engage Drive:** Once the jump plot is ready, the ship's engineer must throw Engineering/EDU 8+ to engage the Jump Drive. This procedure takes a second and can be done in the same round as the jump throw itself.
3. **Jump!:** To jump, throw 2D with the following DMs. A throw of 0 or less causes a misjump. A bad jump plot causes an automatic misjump.
4. **In Case of a Misjump:** A misjump causes a [Critical Hit](#) on the ship (see the space combat rules) and may destroy it. Furthermore, the ship travels 1D x 1D parsecs in a random direction.
5. **Jump Accuracy:** If the Pilot rolls the *minimum* number needed to calculate the Jump Plot the GM *secretly* rolls 2D6. If the result is 3 or less, roll 1D6 to determine how many days the ship must travel once it reaches the target system in order to arrive at the intended destination. Once this type of jump inaccuracy has been rolled no amount of retrying will result in a better plot until at least 24 hours has passed due to local jump space conditions.

Extending a ship's jump range

There will be times when you need to travel further than your jump drive can take you in a single jump and there are no systems in between at which to obtain jump catalyst. E.g. You have a 100 ton, J1 trader and you want to get to a system that would require a J2 drive. In this case one could use a 10 ton collapsible tank filled with water in the cargo hold. While in your first jump to the empty hex your catalyst processors turn the water into refined jump catalyst for the second J1 hop to your destination. Use this option to find better selling prices for your cargo. Or, a better system to buy from.

Skimming Jump catalyst from a gas giant

Some ships are built with catalyst scoops. These are used when a ship is skimming unrefined catalyst from a Gas Giant. The procedure is as follows.

The pilot will make at least one low orbit around the gas giant scanning for any upper atmosphere conditions that might make it dangerous for the ship to skim. Anything appearing is mapped and noted so that they can be avoided. The pilot then calculates what speed and route to skim at that will take the ship into the upper atmosphere and out again safely.

The course is made so that even if the ship loses its maneuver drive while skimming it has enough momentum to exit and go into a stable orbit that is high enough to not be dangerous to ship or crew.

In this way help could be called for if the system has a populated planet or there are other ships in system. Skimming itself takes about 1D6 hours regardless of the size of the ship as catalyst scoops are sized proportionality.

A ship's computers

A ship's system computer (TL 9+) in no way resembles today's (TL 7) general purpose computers. Just as a 1940's (TL 5) mechanical and vacuum tube computer doesn't resemble an advanced computer of 2024 A.D.

A ship's (and other advanced vehicles) computer system is not a general purpose computer. It doesn't run on software. It has hardware programs on modules. Those modules are created at the manufacturer and encoded with the ship computer's secret ID. One cannot swap modules not so encoded as the computer won't run them. On these computers, programing and data is separate and you cannot alter or introduce new programming with data. Not surprising since one doesn't want a ship mis-jumping and killing all aboard because of computer malware or a hacker.

Starship Expenses

A starship's owner must handle several expenses, detailed below.

Mortgage

A mortgaged ship's owner must pay 1/320th of the ship's cash price per month for 480 months (40 years). This means that the owner pays 150% of the ship's purchase price back to the bank.

Crew Salaries

A ship needs the following crew-members:

Captain: Cr6,000 per month if hired (i.e., when the captain is not the ship's owner/operator). The captain leads the crew and manages the ship and requires at least Leadership 1. Any crew member can serve as captain in addition to another job (at no additional pay), but this limits their capability to lead the crew in battle or other emergency. Furthermore, a ship can have a captain without the Leadership skill, but such captain will be unable to use the special captain actions described in the Space Combat chapter. A dedicated, skilled captain is essential if the ship expects combat.

Pilot: Cr6,000 per month. Requires at least Piloting 1. The Pilot flies and maneuvers the ship, as well as plots interplanetary movement and interstellar jumps. Every ship requires a pilot. Military ships will have more than one pilot in the event of crew casualties.

Sensor Operator: Cr3,000 per month. Requires at least Computer 1. Many civilian ships forgo this position and have the pilot operate the ship's sensors, but this limits their utility in the case of emergency or combat. For this reason, military vessels will have dedicated sensor operators. A ship can have a single Sensor Operator, though military craft often carry multiple Sensor Operators in the event of crew casualties.

Engineer: Cr4,000 per month. Requires at the Engineering skill at level 1. The Engineer maintains the ship and operates its drives. Any ship must have at least one engineer with Engineering 1 per 35 tons of drives and power plant. An engineer with Engineering 2 could run 70 tons of drives and power plants. Ships with less than 35 tons of drive and power plant do not require a full-time engineer. On larger ships, the engineer may have assistants, who are also required to have at least Engineering-1 so that there is one level of Engineering per 35 tons of drives and power plant.

Medic: Cr3,000 per month. Requires at least Medicine 1. At Medicine 2 or better, the Medic is referred to as the Surgeon. The Medic provides medical care to passengers and crew and oversees any cryotubes. Any legitimate ship carrying passengers requires a Medic, and many ships without passengers employ one to care for the crew. Each level of the Medicine skill allows the Medic to care for 50 crew and passengers.

Purser: Cr3,000 per month. Requires at least Administration 1. The Purser manages the ship's accounts and supplies. This position is often combined with another job, usually the Steward, with no additional pay. Smaller ships with a single Steward rarely have a Purser.

Gunner: Cr1,000 per month. Requires at least Gunnery 1. Any armed ship requires one gunner per turret unless the guns are automated.

Security and Star Troopers: Cr1,000 per month. Requires at least Gun Combat 1. This position is optional. Security personnel protect a civilian starship against criminals and pirates. They are most often called upon to handle rowdy passengers. Military ships often carry Star Troopers for boarding actions and planetary operations.

Steward: Cr1,000 per month. Requires at least Steward 1. Any ship carrying passengers requires one or more Stewards to care for passengers., as described later in this chapter.

Jump catalyst

Interstellar jumps require **liquid hydrogen catalyst**. Starports rated A or B sell refined catalyst at Cr500 per ton. Starports rated A to D sell unrefined catalyst at Cr100 per ton. Military or exploration ships usually have on-board catalyst processors capable of refining unrefined catalyst; small commercial ships often avoid using refineries to save cargo space and because the purification process is too long to be economically viable unless done during a Jump.

Ships may obtain unrefined Jump catalyst, free of charge, by two other means:

A ship can **draw water** from any world with a hydrographic rating of 1 or higher. Catalyst extracted in this manner is unrefined. Most worlds with starports discourage or ban this practice, but it is a common practice on the frontier. Drawing water takes 1 hour per 20 tons of water.

A ship can **scoop** gas giants for hydrogen. Catalyst gathered in this manner is unrefined. This takes 1D hours per 40 tons of catalyst. Note that gas giants are a favorite ambush spot for pirates.

Catalyst processors, if installed, can refine unrefined catalyst into refined catalyst. A ton of catalyst processing equipment can refine 5 tons of unrefined catalyst into refined catalyst per 24 hours.

Life Support

Each person, passenger, or crew incurs a cost of Cr500 per month for life support, other expenses, and overhead. Luxury life support—gourmet food and other luxurious amenities—costs Cr1,000 per month. Note that High Passage *does not* require luxury life support. However, advertising luxury life support grants an additional die to the High Passenger availability roll on the **Available Freight and Passengers Table** below at Starports rated C or better.

Each occupied cryotube costs Cr100 per month for life support in standard travel. Cryotube occupants can survive much longer – decades or more – without external life support by putting the passenger into Deep Freeze, but that imposes DM-2 penalty on their revival throws.

Purchasing life support in bulk reduces costs and allows the ship to operate for a longer time away from port. A ton of life support supplies – enough for 20 persons for a month – costs Cr8,000 instead of Cr10,000.

Spaceships recycle all water and air as long as there is power.

Port Fees

A starport berth costs Cr100 for 6 days, and Cr100 per day afterwards.

Maintenance

Ships require maintenance work at a starport rated C or better once per year. This costs 0.1% of the ship's listed price. Thus, a ship costing MCr30 would pay Cr30,000 for annual maintenance. If the ship skips maintenance, the Engineer must throw Engineering/INT 8+ each month to avoid a mishap; each mishap means that a single ship system has broken down: roll a single combat Hit and apply the damage to the vessel. Apply a DM-1 for every additional month of maintenance skipped. However, reroll any "Critical Hit" results rolled in this case: ships do not explode due to faulty maintenance. At least, not normally. A properly maintained ship built at TL 12+ and that is operated within its safety limits will remain operational for at least 2,000 years.

Starship Revenue

Ships generate revenue by carrying passengers, freight, mail, or by hiring out as charters. Speculative trade, described in the Speculative Trade chapter, can also generate revenue.

Passage

There are five types of ship passage tickets. Prices are per parsec traveled. For example, traveling two parsecs by Jump-2 by Middle Passage would cost Cr16,000 and take one week. The same ticket bought on a Jump-1 ship would cost the same but take 2 weeks minimum. Roll on the Available Freight and Passengers table below for available passengers of each class going to a *destination* world. A ship may remain in port to look for more passengers; roll again every 3 days after the first six, but they must now use the new number of passengers, even if that number is lower than originally rolled. A ship can take on all or part of the available passengers. Roll an additional die for High Passengers if luxury life support is available.

High Passage is first-class travel with excellent service and cuisine, and costs Cr10,000 per parsec travelled. The baggage allowance is 1,000 liters. The ship's Steward can serve 3 High Passengers during the journey per level of the Steward skill. Steward-0 does not count for the purposes of tending to High Passengers. For example, Steward-2 allows the steward to care for up to 6 High Passengers. It is normal for a ship to "bump" a Middle Passenger or two Steerage Passengers in favor of a late-arriving High Passenger. In this case, the bumped passenger's ticket is refunded, but there is no further compensation.

Middle Passage is standard travel with normal service and cuisine, and costs Cr8,000 per parsec travelled. The baggage allowance for Middle Passage is 200 liters. The Steward may serve 6 Middle Passengers for each level of Steward skill. Steward-0 does not count towards tending Middle Passengers.

Steerage Passage is economy-class travel at double occupancy (2 passengers per stateroom) with simple self-service cuisine. Steerage costs Cr3,000 per parsec traveled. The baggage allowance for Steerage is 40 liters. Each level of the Steward skill, including Steward-0, allows the steward to serve 12 Steerage passengers.

Low Passage means traveling in cryo-sleep. This is unsafe, but cheap, and costs Cr1,000 per parsec traveled. The baggage allowance for Low Passage is 20 liters. Cryo-sleep is dangerous and potentially lethal. The ship's Medic throws Medicine/EDU 6+ to safely thaw and revive Low Passengers. Apply the passenger's END DM to this throw as well. Failure means that the passenger dies from cryogenic shock. In the absence of a medic, the cryotube itself can revive its occupant with an effective Medicine skill of 0 and an INT modifier of +0.

A ship's captain may hire an individual to fill a vacant position on a starship by arranging **Working Passage**. This provides the passenger with free travel, accommodations, and food in exchange for working at that shipboard post. The baggage allowance is 1,000 liters. Labor laws often require that the captain hire the passenger on as crew at full salary if they continue to work for more than three jumps.

An **Interplanetary Passage** that takes more than one day on a small craft or system ship utilizes a ½ stateroom (single occupancy only) and costs Cr4,000 per trip regardless of the number of days to reach the in-system destination. Baggage allowance is 100 liters. Service is as per steerage passage above.

Stowing Away on a starship is ill-advised. If caught and handed over to the authorities, the stowaway will go to prison. Some captains avoid the hassle of dealing with planetary legal bureaucracies by throwing the stowaway out of the airlock, or selling them to slavers or organ-leggers.

Note that each level of Steward skill can serve either 3 High Passengers, or 6 Middle Passengers, in addition to 12 Steerage passengers. For determining the maximum number of passengers, a steward can tend to, consider each level of Steward skill as a point: each point can be allocated to serve only one class of passengers. For example, a steward with the Steward-1 skill can serve 3 High Passengers, or 6 Middle Passengers, or 24 Steerage Passengers (since Steward 0 can cover 12 Steerage already). That same steward could not manage 2 High Passengers and 2 Middle Passengers. A steward with Steward-2 may serve 6 High Passengers, or 12 Middle Passengers, or 36 Steerage Passengers – or 3 High Passengers, 6 Middle Passengers and 12 Steerage passengers, or 3 High Passengers, and 24 Steerage Passengers, and so on.

Available Freight and Passengers Table

Destination Pop. & TL 4 or higher	Freight (tons) (Cr1,000/psc)	High Passengers (Cr10,000/psc)	Mid Passengers (Cr8,000/psc)	Steerage Passengers (Cr3,000/psc)	Low Passengers (Cr1,000/psc)
8+	3Dx50	3D	3D	4D	3Dx4
7	3Dx10	2D	3D	4D	3Dx3
6	3Dx2	1D	2D	3D	3Dx2
5	4D	1D/2*	1D	2D	2D
3-4	1D	0	1D/2*	1D	1D
<3	0	0	0	0	0

*Round down

The above availability numbers assume a tramp freighter with no fixed schedule. The Referee should allow DMs if the ship sets up a regular schedule between worlds. Rates are in Credits per Parsec travelled.

Bulk Freight

A ship can transport cargo in bulk. This pays Cr1,000 per ton of cargo per parsec jumped. For example, transporting a ton of cargo in a single Jump-2 pays Cr2,000. Roll on the Available Freight and Passengers table above for available freight going to a given *destination* world. A ship may remain in port to look for more cargo; roll again every 3 days. A ship can take all or part of the available cargo. A ship may break up the available freight but must take the cargo in lots of each die rolled. For example, if the ship is at a Class B starport, there is 3Dx5 tons of freight available. The Referee

rolls the 3D getting a 5, 3, and 6 – therefore, there are 3 available lots of freight 25 tons, 15 tons, and 30 tons. A ship's Purser may select any or all of the lots but must take them in the full tonnage of each lot.

Mail and Incidentals

An armed merchant can sign up to carry 5 tons of mail. This pays Cr25,000 per parsec. Throw 1D-1 for the actual tonnage of mail carried (minimum 1 ton). Other ships may carry private messages and parcels to a specific location. This pays Cr20 to Cr120 (Referee's discretion) per message or parcel. As a rule of a thumb, one ton of cargo can contain up to 50 typical parcels. Messages are electronic, and the ship's computer may hold an effectively limitless number of them.

Charters

A private individual or concern may charter a ship. Payment for in-system charters is Cr4 per ton of the ship per hour, with a 12-hour minimum. For example, a 100-ton scout would cost Cr400 per hour, minimum Cr4800. Payment for interstellar charters is in 2-week blocks at Cr3,000 per ton of cargo hold plus Cr24,000 per passage stateroom and Cr3,000 per cryotube. The owner of the vessel still pays the overhead and supplies a crew. For example, a 100-ton Scout has four staterooms (Cr96,000), one low berth (Cr3,000), and 14 tons of cargo (Cr56,000) for a total potential of Cr155,000 for a charter of two weeks. Details of possible charters are left to the Referee.



Electronics and Sensors

All starships have a computer and assorted electronics and avionics. The computer model determines two things. The first is the highest jump rating the ship can achieve, and the other is a DM to all sensor throws, as shown in the following table. A ship's electronics can detect and plot planetary bodies out to the distance of the Jump range they support.

Electronics and Sensors Table

Electronics	Max. Jump Rating	Sensor DM
Baseline	-	DM-4
Model/1	Jump-1	DM-2
Model/2	Jump-2	DM+0
Model/3	Jump-3	DM+1
Model/4	Jump-4	DM+2
Model/5	Jump-5	DM+2
Model/6	Jump-6	DM+3
Model/7	Jump-6	DM+4
Model/8	Jump-6	DM+5

Throw Computer/INT 8+ to use a ship's sensors for scanning and detection purposes. Apply the ship's Sensor DM to this throw. The Referee may determine various further DMs to this throw based on the task at hand.

Starship sensors automatically detect any ship present in the local planetary system if it is using a transponder. Smugglers, pirates, and fleet vessels often turn off such transponders and thus require a Computer/INT 8+ throw to detect at long range. A **stealthed** ship applies DM-4 to detection throws. Detecting small craft applies a further DM-2. Detecting ships at short range is done at DM+2. A 100 ton ship can be detected out to a range of 300 million Km per Model number within 2 hours using passive IR sensors. This detection simply gives a direction without range. Further scanning and ship movement is required for triangulation that is necessary to get distance and vector.

Sensors are also useful in ship combat, as described in the [Space Combat chapter](#).

Trade and Smuggling

A ship can generate a steady profit from hauling cargo and passengers. However, speculative trading offers a chance for far greater profits – at the risk of significant losses. The following simple system is designed to allow merchant traders to engage in speculative trade.

Speculative Trade Procedure

For speculative trade, follow the procedure below:

1. Find a supplier.
2. Determine goods available.
3. Determine purchase price.
4. Travel to a new world.
5. Find a buyer.
6. Determine sale price.



Remember the first rule of trading: Buy low, Sell high.

1. Find a supplier

Throw the listed skill below to find a supplier. If you fail the throw, you may look for additional suppliers, but at DM-1 per previous attempt per planet per week.

To find a corporate supplier, throw Liaison/SOC 8+.

To find a black-market supplier for illegal goods, throw Streetwise/INT 8+.

To find a private supplier, throw Carousing/SOC 8+.

DM+6 for Starport A; DM+4 for Starport B; DM+2 for Starport C; DM -1 for Starport D and DM-2 for Starport E.

2. Determine goods available

There are two types of goods – common and trade. A given supplier has all Common Goods and 1D randomly chosen trade goods. To the 1D roll, apply DM+1 if Starport C, DM+2 if Starport B, DM+4 if Starport A, or DM-2 if Starport E. This can never be less than one. Throw “D66” on the following table to determine available trade goods. This means throwing 2D, but rather than adding them together, read them consecutively, that is – one as the “tens” digit and the second as the “ones” digit. Remember to declare which is which *before* rolling.

Ignore the results of 61-65 unless dealing with a black-market dealer – these goods are universally illegal or otherwise highly questionable.

If certain regular trade goods are illegal on a planet, a black-market supplier will offer them as well. The Referee should use the world's Law Level as a guide to what is legal and illegal on a particular world.

Smuggling

Running contraband—such as results 61-65 on the trade table—means running the risk of being caught by the authorities. Apart from inspection by patrol boat in space, covered by the ship encounter rules earlier in this book, selling or buying illegal goods is likely to attract unwanted law enforcement attention:

To avoid an encounter with law enforcement while smuggling, throw 2D and get equal to or higher than the world's Law Level. Failure means some police harassment. Such harassment does not necessarily mean that the characters were caught smuggling, but rather that they are in the risk of being caught; avoiding the Law in such a case is an adventure all by itself. The Referee can abstract this interaction to a single Streetwise or Admin throw to avoid trouble, or fully role-play the encounter.



In cases where goods are deemed illegal due to the local planetary Law Level (see the *Worlds* chapter), the Referee should apply a DM+1 or DM+2 to the Sale throw on the Modified Price Table, below.

Common Goods Table

Item	Cost per ton	Tons	Purchase DMs	Sale DMs
Basic Consumable Goods	Cr1,000	2Dx5	Ag+3, Ga+2	Hi+1, Ri+2
Basic Electronics	Cr25,000	2Dx5	Ht+2, In+4	Ni+2, Po+1
Basic Machine Parts	Cr1,000	2Dx5	In+3, Ri+2	Na+1, Ni+2
Basic Manufactured Goods	Cr20,000	2Dx5	In+3, Ri+2	Ag+1, Ni+2
Basic Raw Materials	Cr5,000	2Dx5	As+3 Ni+1	In+2 Ri+2
Common Unrefined Ore	Cr2,000	2Dx5	As+2, Va+1	In+2, Na+1

Trade Goods Table

D66	Trade Goods	Base Price per Ton	Tons	Purchase DMs	Sale DMs
11	Advanced Electronics	Cr100,000	1Dx5	Ht+2, In+4	Ni+2, Po+1
12	Advanced Manufactured Goods	Cr200,000	1Dx5	In+3, Ri+2	Ag+1, Ni+2
13	Agricultural Equipment	Cr150,000	1D	In+3, Ri+2	Ag+2, Ga+1
14	Animal Products	Cr1,500	4Dx5	Ag+2, Ga+3	Hi+2, Ri+1
15	Collectibles	Cr50,000	1D	In+2, Ri+3	Hi+2, Ni+1
16	Computers	Cr150,000	2D	Ht+3, In+2	Na+1, Ni+2
21	Crystals and Gems	Cr20,000	1Dx5	Ni+3, Na+2	In+1, Ri+2
22	Cybernetic Parts	Cr250,000	1Dx5	Ht+3, Ri+2	Na+1, Ni+2
23	Food service equipment	Cr4,000	2D	In+3, Na+2	Ag+1, Ni+2
24	Furniture	Cr5,000	4D	Ag+2, Ga+3	Hi+1, Ri+2
25	Gambling Devices and Equipment	Cr4,000	1D	Hi+2, Ri+3	Na+2, Ni+1
26	Grav Vehicles	Cr160,000	1D	Ht+3, Ri+2	Ni+2, Po+1
31	Grocery Products	Cr6,000	1Dx5	Ag+3, Ga+2	Hi+1, Ri+2
32	Household Appliances	Cr12,000	4D	Hi+2, In+3	Na+1, Ni+2
33	Industrial Supplies	Cr75,000	2D	In+3, Ri+2	Na+1, Ni+2
34	Liquor	Cr15,000	1Dx5	Ag+3, Ga+2	In+1, Ri+2
35	Luxury foodstuffs and fabrics	Cr150,000	1D	Ag+2, Ga+3	In+1, Ri+2
36	Manufacturing Equipment	Cr750,000	1Dx5	In+3, Ri+2	Na+1, Ni+2
41	Medical Equipment	Cr50,000	1Dx5	Ht+2, Ri+3	Hi+1, In+2
42	Petrochemicals	Cr10,000	2Dx5	Na+2, Fl+3	Ag+1, In+2
43	Pharmaceuticals	Cr100,000	1D	Ht+3, Wa+2	In+2, Ri+1
44	Complex chemical compounds	Cr7,000	4Dx5	In+2, Ri+3	Ni+2, Va+1
45	Precious Metals	Cr50,000	1D	As+3, Ic+2	In+1, Ri+2
46	Radioactives	Cr1,000,000	1D	As+2, Ni+3	In+2, Ht+1

51	Robots and Drones	Cr500,000	1Dx5	Ht+3, Ri+2	Ni+1, Ri+2
52	Scientific Equipment	Cr50,000	1Dx5	Ht+3, Ri+2	Hi+2, Ni+1
53	Survival Gear	Cr4,000	2D	Ga+1, Ri+2	Fl+2, Va+1
54	Textiles	Cr3,000	3Dx5	Ag+3, Ni+2	Na+1, Ri+2
55	Uncommon Raw Materials	Cr50,000	2Dx5	Ag+3, Ni+2	In+2, Na+1
56	Uncommon Unrefined Ores	Cr20,000	2Dx5	As+2, Va+1	In+2, Na+1
61	Illicit Luxury Goods	Cr150,000	1D	Ag+2, Ga+3	In+4, Ri+6
62	Illicit Pharmaceuticals	Cr100,000	1D	Ht+3, Wa+2	In+6, Ri+4
63	Illegal Medical Research Material	Cr50,000	1Dx5	Ht+2, Ri+3	In+6, Na+4
64	Illegal Military Equipment	Cr150,000	2D	Ht+3, In+2	Hi+6, Ni+4
65	Illegal Weapons and Armor	Cr30,000	2D	In+3, Ri+2	Ni+6, Po+4
66	Highly Unusual Cargo	**	**	**	**

** Unusual cargo denotes highly unusual items such as alien artifacts, high-tech prototypes, stolen artwork, or unique lifeforms.

Modified Price Table: Roll 2D

Result	Purchase	Sale
2-	200%	40%
3	180%	50%
4	160%	60%
5	140%	70%
6	120%	80%
7	110%	90%
8	100%	100%
9	90%	110%
10	80%	120%
11	70%	130%
12	60%	140%
13	50%	150%

14	40%	160%
15	30%	180%
16+	20%	200%

3. Determine Purchase Price

Speculative purchase prices vary wildly based on local supply, political or economic conditions, and the suppliers themselves. To determine the purchase price, throw 2D on the Purchase column of the Modified Price Table, above. The throw is modified by the character's INT or SOC DM (whichever is higher), and by the character's Liaison skill level. Use whichever skill or attribute modifier is greatest and consult the Purchase Price column. Further modify this result by a trade good's Purchase DM based on the world of origin. Only one trade code applies to each transaction – in the case where multiple trade DMs apply to a single world, use the highest one.

Finally, modify the purchase price according to the Traffic and Safety modifiers.

Multiply the base price by the resulting purchase percentage to get the final purchase price per ton. Then multiply that price by the number of tons of goods within a lot to determine the final purchase price of that lot.

Like freight, Common Goods may be purchased in lots of a single die. However, other Trade Goods must be purchased in lots equal to the full tonnage rolled.

4. Selling Goods

The procedure for selling goods is the same as purchasing goods: find a buyer on a new planet using the same skills used to find a supplier. Roll 2D on the Modified Price Table and consult the Sale Price column. The throw is modified by the character's INT or SOC DM (whichever is higher), and by the character's Liaison skill level. Apply the highest Trade Good Sale DM for the world where the goods are being sold to the roll on the Sale Price table. Finally, apply the Traffic and Safety modifiers to the Sale Price column. Selling Characters may avoid selling goods to a certain buyer or on a certain world and may throw again as they search for another buyer after one week. Alternatively, they may try their luck on another world.

Traffic and Safety Modifiers

The Trade Goods have Purchase and Sale DMs that reflect the relative supply and demand realities of the world where those goods are being bought and sold. They are fairly comprehensive, but neglect to consider two important factors that impact prices: the relative amounts of traffic and safety that define the world. High traffic drives purchase and sale prices down, as there are more traders and more merchants competing on a given world. Conversely, worlds that see low traffic tend to have higher prices. As well, worlds that are increasingly unsafe see a dramatic rise in prices as fewer and fewer merchants engage in commerce on those worlds.

There are two ways to define traffic and safety levels in Spaceships & Star Systems. The "classic" way uses the Starport, and Zone Codes found in the UWP. A more qualitative method that we include here meshes with the Starship Encounter rules found on p.138, as well as in Stellagama Publishing's *Piracy and Privateering* rulebook.



Traffic, Safety, and Legality Price Modifiers Table

Starport Code	Traffic Rating	Purchase DM		Starport Code	Traffic Rating	Sale DM
A	High	+2		A	High	-3
B		+1		B		-2
C	Medium	0		C	Medium	-1
D		-1		D		0
E	Low	-2		E	Low	0
X		-2		X		+1
System Color	Safety Rating			System Color	Safety Rating	
Normal	Secure	0		Normal	Secure	0
Amber	Independent	+1		Amber	Independent	0
Red	Dangerous	+3		Red	Dangerous	+2
				Legality (relative to Law Level)		
				Slightly Illegal	+1	
				Highly Illegal	+2	

Local Brokers

A local broker, well-versed in the local market and well-connected to suppliers and buyers, can improve the trader's chances to gain favorable prices. A broker adds a +DM to purchase and sale price throws but takes a commission from the transaction sum (always paid by the speculative trader). Brokers are always available, limited by the starport class, as noted below.

Local Brokers Table

Broker DM	Commission	Minimum starport class
DM+1	5%	E
DM+2	10%	C
DM+3	15%	B
DM+4	20%	A



Ship Design and Construction

Spaceships are broken into three main categories: 1. Starships, jump capable ships of 100+ tons. 2. System Ships, Non-jump ships of 100+ tons. And 3. Small Craft, ships from 10 to 99 tons. Players will typically operate a small starship, though larger-scale fleet, exploration, or merchant line campaigns are also possible. This chapter presents a system for designing spaceships from scratch and for upgrading existing ships.

These rules classify ships by their volume rather than mass, because gravitic maneuver drives are classed by the volume of ship they can move. The mass being moved is not relevant. Ship designs note vessel sizes in displacement tons: this is how many tons of liquid hydrogen the ship displaces. 1 displacement ton (d-ton or ton, for short) equals approximately 14 cubic meters: a cube roughly 2.4m per side. On a square grid map where each square is 1.5m per side and 3.0m high, each ton is represented by approximately two squares on the deck plan.

Where are the windows? Spaceships don't have windows for several reasons. Firstly, they are not needed as a ship's hull is dotted with numerous sensors that detect and relay images across the EM spectrum to view screens in the ship. This includes radar and other sensors. Secondly, there is almost never anything one needs to see or can see in space. Thirdly, there is no clear material strong enough to replace the advanced ship hull material that must withstand the radiation and micro-particles hitting the ship at the insanely high speeds experienced in space travel. For example, traveling from Earth to Jupiter at just 1 G of constant acceleration and deceleration brings you to a top speed of 2,828 kilometers per SECOND. And the fourth reason is that sensors do a MUCH better job than our eyes could ever do by looking out of a window for any task needed to be done on a ship.

A note on tech levels: the default interstellar space-opera tech level in Spaceships & Star Systems is TL12. Ships designed at lower or higher Tech Levels are possible.

Also note that these rules present interstellar-level spacecraft designs at TLs 9-16, which are ideal for space-opera campaigns. Societies at TLs 6-8 can also manufacture spacecraft for intra-system travel, but these are considerably more primitive than the interstellar-era craft one can create with these ship construction rules. For the sake of brevity, we will not describe primitive craft here.

Ship Design Checklist

1. Choose hull size.
 - a. Choose hull configuration.
 - b. Add armor, if desired.
2. Choose and calculate maneuver drive, jump drive, and power plant.
3. For jump-capable ships, determine Catalyst requirements.
4. Add bridge.
5. Choose electronics.
6. Optionally, add weaponry and shields.
7. Add additional components and carried craft.
8. Determine crew and passengers.
 - a. Add staterooms and cryotubes accordingly.
9. Allocate remaining space to cargo.
10. Calculate final cost and construction time.
11. Mass-produced ships enjoy a 10% discount.

Ship Hull

Hulls cost MCr0.1 per ton. This is modified by the ship's configuration, as given below. The largest available starship hull in **Spaceships & Star Systems** is 10,000 tons.

Starships can be constructed at Class-A starports, system ships (which lack jump drives) and small craft (vessels under 100 tons) can be constructed at Class-A or Class-B starports. Use the following table to determine the construction time of a spacecraft.

Spacecraft Construction Times

Ship Tonnage	Construction Time (weeks)
<100 tons	26
100 – 500 tons	52
501 – 1000 tons	78
1001 – 2000 tons	120
2001 – 3000 tons	150
3001 – 4000 tons	180
4001 – 5000 tons	210
5001 – 10000 tons	300

Hull Configuration

There are three general starship hull configurations:

Standard: The ship is robust enough to enter an atmosphere but will maneuver very slowly. It cannot fly like an aircraft but only land and take off into space again. Ships with Standard hulls may not land nor take off from a world with a gravity equal to or greater than the ship's M-drive rating. The ship is aerodynamic enough to skim gas giants for catalyst.

Lifting Body: The ship can land and take off like an aircraft in an atmosphere of Very Thin or higher. It can land and take off from planets that exert up to one gravity more than the ship's M-Drive if the atmosphere is at least Very Thin. The ship may not land or take off from a world that has a gravity equal to or greater than the M-drive rating if the atmosphere is less than Very Thin. The ship may skim gas giants for catalyst and comes equipped with Catalyst Scoops at no extra cost. Lifting Body hulls cost 10% more than the standard price (**MCr0.11 per ton**).

Distributed: The hull is designed with only space operations in mind. The ship is non-aerodynamic and can be damaged if moving faster than 100 kph while in an atmosphere denser than Trace. It may not land on a world nor skim gas giants for catalyst; ships with distributed hulls will often carry small craft to interface with worlds. The hull costs 10% less than the standard price (MCr0.09 per ton).

Ship Armor

Ships armor is available as Light Armor and Heavy Armor. Armor affects the performance of anti-ship weapons and may even prevent damage completely from lighter weapons.

Ships of 1000 tons or more automatically increase armor by one increment: treat an unarmored 1000+ ton ship as having Light Armor, a lightly armored 1000+ ton ship as having Heavy Armor, and a heavily armored 1000+ ton ship as having Massive Armor (a category only available for such large ships).

Light Armor

The following table lists how many tons of space Light Armor occupies and how much it costs by Tech Level.

Light Armor Technology

Armor Type	TL	Tonnage	Cost
Titanium Steel	7	12.5% of ship tonnage	12.5% of base hull cost
Composite Alloy	8	10% of ship tonnage	20% of base hull cost
Crystaliron	10	6.5% of ship tonnage	25% of base hull cost
Superdense	12	5% of ship tonnage	30% of base hull cost
Bonded Superdense	14	4% of ship tonnage	40% of base hull cost
Collapsed Superdense	16	3.5% of ship tonnage	50% of base hull cost

Heavy Armor

The following table lists how many tons of space Heavy Armor occupies and how much it costs by Tech Level.

Heavy Armor Technology

Armor Type	TL	Tonnage	Cost
Titanium Steel	7	25% of ship tonnage	25% of base hull cost
Composite Alloy	8	20% of ship tonnage	40% of base hull cost
Crystaliron	10	12.5% of ship tonnage	50% of base hull cost
Superdense	12	10% of ship tonnage	60% of base hull cost
Bonded Superdense	14	8.5% of ship tonnage	80% of base hull cost
Collapsed Superdense	16	7% of ship tonnage	100% of base hull cost

Stealth

Specialized emissions-masking systems and stealth structures can render a ship difficult to detect by sensors at any range. Stealth costs MCr0.1 per ton of the ship's hull. Stealth modifications provide DM-4 to any Computer throws to detect or lock onto the ship in and out of combat.

Drives

A system ship must have a maneuver drive (M-Drive) and a power plant (P-Plant). A starship must have a jump drive (J-Drive) and a power plant (P-Plant); a maneuver drive may also be installed but is not required.

On the Drive Performance tables, the maneuver drive potential is the Thrust number (Tn), measured in the number of G's of acceleration available. For Jump Drives, the potential is the Jump number (Jn), or Jump range in parsecs. The power plant rating code must be at least equal to either the maneuver drive or Jump drive rating, whichever is higher.

Drives use a percentage of ship's tonnage. Note that higher tech levels can produce more efficient drives.

Drive and power plant performance is not linear. Small and exceptionally large components tend to be less efficient than moderately sized units. This is especially true with small craft drives, which are significantly less efficient than those of ships (100+ tons).

Note that Performance of "0" represent station-keeping ability only, no tactical maneuvering. Often used by space stations and orbital facilities. Also note that while a space station might have Maneuver Drive 0, it must have at least Power Plant 1 to operate.

Drive Cost: Jump drive, Maneuver drive, and Power Plant components cost **MCr1.5** per ton.

Small Craft Drives (10-99-ton hull)

Table: Drive Performance (Percentage of hull tonnage)							
Type	0	1	2	3	4	5	6
Power Plant	-	4.5	7.8	11.4	15.0	18.9	23.1
M-Drive	1.5	2.7	4.5	6.6	9.0	11.7	14.7
J-Drive	-	9	13.5	19.5	27	36	46

Ship Drives (100+ ton hull)

Table: Drive Performance (Percentage of hull tonnage per drive rating)							
Type	0	1	2	3	4	5	6
Power Plant	-	1.5	2.6	3.8	5.0	6.3	7.7
M-Drive	0.5	0.9	1.5	2.2	3.0	3.9	4.9
J-Drive	-	3.0	4.5	6.5	9.0	12.0	15.5

Table: Tech Level Adjustment for Drive Percentage									
Drive Type	TL8	TL9	TL10	TL11	TL12	TL13	TL14	TL15	TL16
Power Plant	1.9	1.7	1.6	1.5	1.0	0.9	0.8	0.7	0.6
M-Drive	1.5	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.6
J-Drive		2.0	1.4	1.2	1.0	0.9	0.8	0.7	0.6

Jump Technology

While all gravitic maneuver drives and EM-fission power plants are available from TL9 on, jump technology develops more gradually, as follows. Remember that the ship's computer also determines the ship's maximum jump rating.



Jump Rating	Minimum Tech Level
1	9
2	11
3	12
4	13
5	14
6	15

Fuel

Fission power plants include their own fuel. Power plant fuel suffices for over a year; annual maintenance costs include the expense of refueling the power plant. However, jump drives require liquid hydrogen catalyst for each jump. When performing a jump, a starship uses 10% of its tonnage in catalyst per parsec jumped. To determine how much catalyst a given jump consumes, multiply the starship's tonnage by 0.1, and then multiply that number by the number of parsecs being travelled in the jump. For example, a 100-ton starship performing Jump 2 must expend $100 \times 0.1 \times 2 = 20$ tons of catalyst to operate its jump drive.

Starship & System Ship's Bridge

Any ship of 100 tons or more has a bridge based on its total tonnage. The size of the bridge is 2% of the hull tonnage and costs MCr0.5 per 100 tons of starship. This tonnage also includes avionics and communication equipment, and in a starship, Jump sensors and the hull's jump grid. A system ship's (non-starships of 100+ tons) bridge size is 1% of hull tonnage. Minimum bridge tonnage is 10 tons for a starship and 5 tons on a system ship.

Small craft cockpit and accommodations

A small craft control cabin or cockpit costs MCr0.1 per 20 tons of craft. A cockpit is cramped and will be uncomfortable for more than 24 hours of continuous use. Apply a DM-1 to skill checks in those cases. A control cabin is far more comfortable for longer journeys.

In addition, small craft may also mount acceleration couches, allowing them to carry passengers for short flights of 12 hours or less. These couches accommodate a single person each, displace 0.5 tons and cost Cr25000 (MCr0.025) per person. It is possible to install staterooms in small craft as well.

Note that small craft do not require additional electronics beyond the baseline model, though military and exploration craft greatly benefit from them.

Jump Capable Small Craft Requirements

The cockpit costs MCr0.2 per ton of craft and takes 3 tons plus 2% of hull volume. This provides one bridge station, Jump sensors, Jump grid, avionics and communication equipment. A computer is also required appropriate for the jump drive. In addition, accommodations as per a starship for all crew and passengers is required.

Controls	Tonnage
1-Person Cockpit	1.5 tons (3 tons for jump-capable craft)
2-Person Cockpit	3 tons (4 tons for jump-capable craft)
1-Person Control Cabin	3 tons (4 tons for jump-capable craft)
2-Person Control Cabin	6 tons (7 tons for jump-capable craft)

For each extra person after the first two in a Control Cabin, add 2 tons and MCr0.05 (twice the cost of an acceleration couch because they also have some control capability). Only control cabins can have this added feature. Each cockpit or cabin includes Acceleration Couches for each occupant.

Electronics

Each ship has a central computer and various electronic systems. The computer core itself is exceedingly small; even with hardening and redundancy, this mainframe is rarely larger than a small 21st century beer refrigerator. The actual tonnage includes various electronic systems: wiring, terminals, sensors, and communication systems.

Electronics are required for calculating interstellar jumps. The computer included in an electronic system grants a DM to sensor throws in and out of combat. The electronics may also assist in targeting, as noted in the Space Combat chapter.

All electronic systems are hardened against radiation and electromagnetic pulses, though this hardening is neither perfect nor complete; see the radiation attack rules in the Space Combat section.

Starships need at least Model/1 electronics for jump calculations. Small craft may have baseline computers with minimal electronics: this is included in their cockpit costs and tonnage. However, baseline electronics are recommended only for civilian craft.

You may add an “Advanced” (adv) option to any electronics system. It increases the electronics cost by 50% but also permits the ship to have a maximum Jump rating one higher than what it would attain with standard electronics. For example, Model/1adv electronics would have a Sensor DM-2, cost MCr1.5, and take up 1 ton of space on board, but would allow a maximum of Jump-2.

Electronics	TL	Cost	Tonnage	Max. Jump Rating	Sensor DM
Baseline	-	-	-	-	DM-4
Model/1	7	MCr1	1	Jump-1	DM-2
Model/2	9	MCr3	2	Jump-2	DM+0
Model/3	11	MCr5	3	Jump-3	DM+1
Model/4	12	MCr10	5	Jump-4	DM+2
Model/5	13	MCr20	6	Jump-5	DM+2
Model/6	14	MCr40	8	Jump-6	DM+3
Model/7	15	MCr50	10	Jump-6	DM+4
Model/8	16	MCr100	12	Jump-6	DM+5

Armament

Military craft, as well as civilian craft operating on the frontier, often carry weaponry. Each weapon requires one or more **hardpoints** to mount on a ship. Ships have one hardpoint available per 100 tons of hull size. Fire control is included in the turret or bay tonnage amounts listed below.

Ship weapons have the following stats:

Weapon: weapon's name.

TL: minimum tech level to construct the weapon.

Type: the weapon's type, whether it is Light, Intermediate, Heavy, or a Main Gun.

Hits: the number of internal damage rolls the weapon inflicts on the appropriate damage table. Radiation damage rolls apply regardless of armor rating unless the ship is completely invulnerable to that weapon's class.

Turrets

One turret may be attached to each hardpoint on the ship.

Turret Displacement and Cost			
Weapon	TL	Tons	Cost (MCr)
Single Turret	7	2	0.2
Double Turret	8	3	0.5
Triple Turret	9	4	1
Pop-Up Turret	10	x2	+1
Fixed Mounting	-	-	x0.5

Single, **Double** and **Triple** turrets can hold one, two, or three weapons, respectively.

Pop-Up is a quality that can be applied to any type of turret. The turret is concealed in a pod or recessed on the hull and is detectable only when deployed. A ship with all its weapons in pop-up turrets looks unarmed to a casual sensor scan. Pop-up turrets take up twice as much tonnage as their normal counterparts and add MCr1 to the turret's cost.

Fixed Mounting weapons cannot move and are limited to firing in one direction: usually fixed forward, or fixed rear. Fixed mountings are found mainly on small craft. A fixed mounting costs half as much as a turret with the same number of weapons. See the Space Combat chapter for rules on how to fire Fixed weapons.

Turrets and fixed mounts can accommodate a variety of weapon systems. The legality and availability of a given weapon system is beyond the scope of these construction rules. The Referee should be the final arbiter of what is considered normal, legal, licensed, or illegal in their setting. Remember, the rules will not be same in every star system and starship crews must be careful to ensure they comply with local regulations. In almost every case, nuclear weapons are restricted to military use only.

Weapons

Weapons may be installed in Turrets, Bays, or as Main Weapons. Not every weapon can be installed in all mounting systems at the same tech level, see the tables below for details.

Regular missiles cost Cr1,200 each; **smart missiles**, Cr2,500 each; **nuclear missiles**, Cr50,000 each but are not normally available to civilians. **Smart missiles** are accurate, regardless of the gunner's skill. If they miss their target, they may make one more attempt to hit in the following round. **Nuclear missiles** are Intermediate weapons and cause 2D hits + 1

radiation hit. **Ortillery** missiles attack ground targets and cost Cr5,000 per missile. See the Space Combat chapter for missile attack procedures.

A single missile rack holds 3 missiles, and each ton of cargo space modified as a missile magazine can accommodate 12 missiles. Loading a rack from nearby ordinary cargo takes the gunner a full space combat round. A pre-designated missile magazine allows automatic loading but prevents that space from being used for cargo when not carrying missiles.

Torpedoes are larger military-grade guided weapons. They pack an enormous punch, but are vulnerable to spoofing and point defense, like normal missiles. A torpedo launcher holds one torpedo, while torpedo bays fire salvos of 12 torpedoes. Each torpedo costs Cr5,000, and each ton of cargo space can hold 6 torpedoes. Like missiles, pre-designated torpedo magazines allow for automatic reloading, but prevent the space from being used for cargo at other times.

Pulse blasters are ideal for point defense against incoming missiles. They are powerful but inaccurate, causing 2 hits on impact, but attacking at DM-2 to hit ordinary targets. See the Space Combat chapter for rules on point defense.

Mining blasters are a tool more than a weapon. Belters use these blasters to penetrate asteroids and reach valuable ores. Salvagers also use mining blasters to enter derelict ships or cut the ships up for parts. In a pinch, mining blasters can be used as a potent short-range weapon: they suffer DM-3 to all attack rolls when used as a weapon.

Sandcasters launch anti-blaster sand canisters, described in the Ship Combat chapter. A single sandcaster holds 6 canisters and a single ton of cargo, or magazine, can hold 24 canisters. Sandcaster magazines can serve for sand canisters just as for missile magazines, and a single magazine can be used for both interchangeably, at an exchange rate of two canisters per missile.

Particle Beams blast enemies with beams of charged particles, causing both structural and radiation damage. This is the lightest military-grade energy weapon available, and many polities restrict its use to military and paramilitary ships.

Beam blasters are weak but accurate blasters firing continuous beams.

Plasma Beams: are powerful beam weapons firing ionized plasma.

Fusion Beams: beam weapons emitting plasma undergoing a fusion reaction.

Gravity lances fire shearing beams of gravitons which are exceedingly powerful, but attack rolls are affected by the hull configuration: Lifting Body: DM-2, Distributed: DM+2.

Meson cannons fire streams of exotic particles that decay inside the hull of the target ship. They are notoriously inaccurate, but when they hit, they can cause tremendous damage. Meson cannons ignore armor but are affected by meson shields.

Cherenkov cannons fire a stream of particles that are moving faster than the speed of light in the local medium (tachyons) and can easily penetrate armor. Reduce target's armor rating by one category against this weapon.



Turret Weapons

Weapon	TL	Type	Hits	Cost	Notes
Missile Rack	6	Light	1D per missile	MCr0.75	Nuclear missiles: Intermediate, 2D hits + 1 Radiation.
Pulse blaster	7	Light	2	MCr0.5	DM-2 to hit; superior point defense
Sandcaster	7	Special	Special	MCr0.25	
Particle Beam	8	Light	1 + 1 Radiation	MCr2	
Mining blaster	8	Light	1	MCr0.15	DM-3 to hit
Beam blaster	9	Light	1	MCr1	
Plasma Beam	12	Light	3	MCr3	
Fusion Beam	14	Intermediate	3 + 1 Radiation	MCr4	
Gravitic Lance	16	Intermediate	3	MCr5	

Large Weapons

Large weapons are turret-mounted weapons, used almost exclusively by military ships. A single large weapon can fit in a triple turret and takes up all the turret's space. These larger weapons are designed to penetrate low armor values and are commonly found on escorts and frigates. The following large weapons are available.

Weapon	TL	Type	Hits	Cost	Notes
Blaster Cannon	10	Intermediate	2	MCr5	
Torpedo Launcher	10	Intermediate	3D	MCr4	Launches a single torpedo
Particle Cannon	11	Intermediate	2 + 1 Radiation	MCr10	
Plasma Cannon	12	Intermediate	3 + 1 Radiation	MCr15	
Fusion Cannon	13	Intermediate	4 + 1 Radiation	MCr20	
Gravitic Lance	15	Intermediate	5	MCr25	
Meson Cannon	16	Heavy	5	MCr30	

Bays

A bay weapon is a massive, military-scale gun emplacement designed for large-scale fleet warfare. Each bay displaces 50 tons and uses 5 hardpoints. The following bay weapons are available.

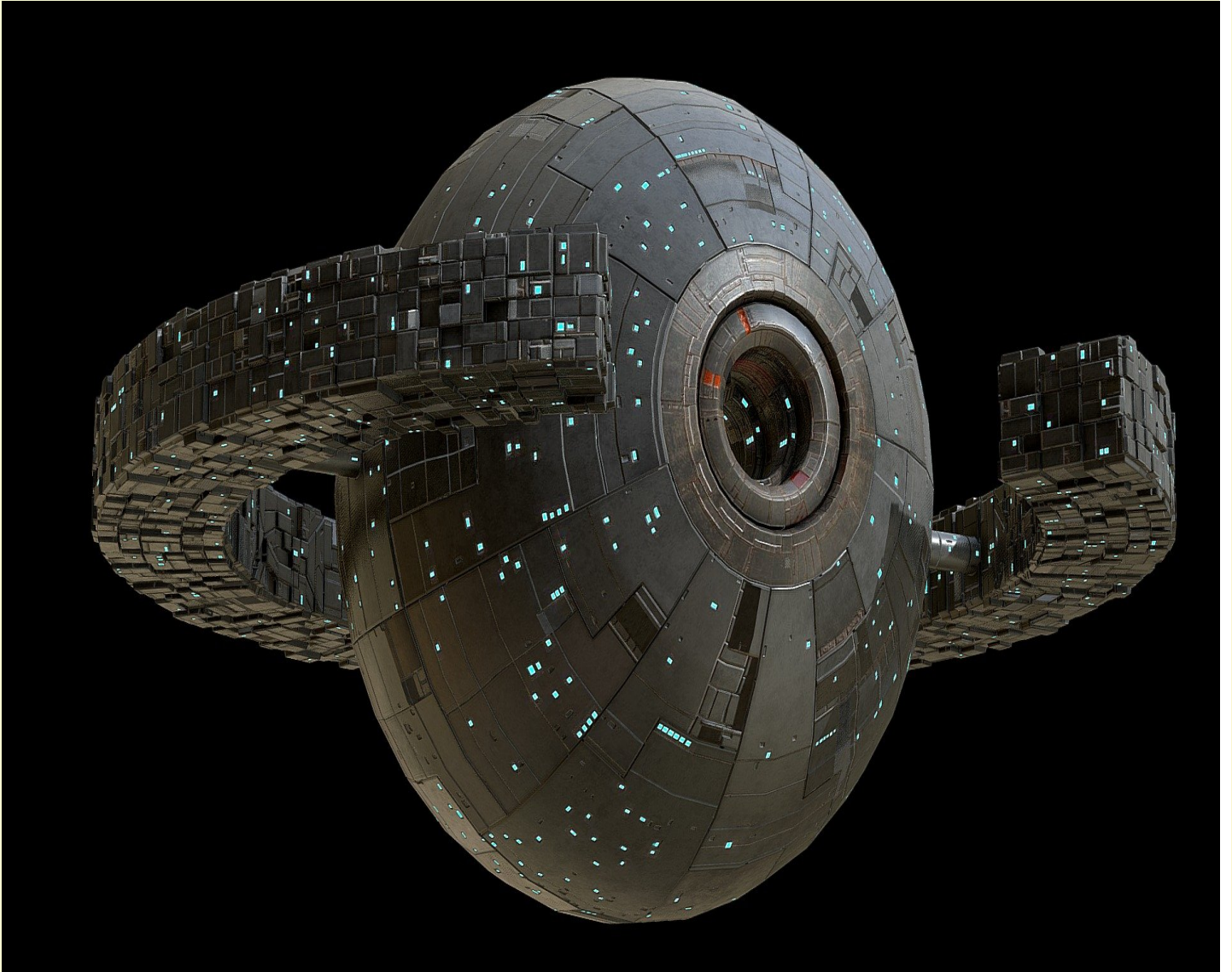
Weapon	TL	Type	Hits	Cost	Notes
Mass Driver	8	Intermediate	2	MCr10	
Blaster Cluster	8	Intermediate	2	Mcr20	
Torpedo Bay	6	Intermediate	3D per torpedo	MCr20	Fires 12 torpedos
Particle Gun	9	Heavy	3 + 1 Radiation	MCr50	
Meson Gun	11	Heavy	4 + 1 Radiation	MCr150	
Fusion Gun	12	Heavy	4 + 1 Radiation	MCr100	
Gravitic Lance	15	Heavy	5	MCr125	
Cherenkov Cannon	16	Main Gun	5	MCr300	

Main Guns

A large starship may carry massive, fixed-mounted, Main Guns in addition to its turrets and bays. A main gun displaces 1000 tons and requires ten hardpoints. There are three types of main guns, Particle Gun, Meson Gun, and Gravitic Disruptor. Note that the Meson Cannon and Gravitic Disruptor ignore armor.

Main Guns

Weapon	TL	Type	Hits	Cost	Notes
Particle Cannon	12	Main Gun	5 + 2 Radiation	MCr500	
Adv. Particle Cannon	14	Main Gun	5 + 2 Radiation	MCr1,000	
Meson Cannon	12	Main Gun	5 + 2 Radiation	MCr1,500	
Adv. Meson Cannon	14	Main Gun	5 + 2 Radiation	MCr3,000	
Gravitic Disruptor	15	Main Gun	6	MCr1,250	
Cherenkov Projector	16	Main Gun	8	MCr3,000	



Shields

Shields are defensive energy systems that protect against specific attacks.

Shield	TL	Effect	Tons	Cost (MCr)
Meson Shield	12	Protects against meson weapon damage, halving the number of hits inflicted by a meson weapon (rounded down). Meson shields prevent radiation damage from meson weapons.	50	60
Nuclear Damper	12	Halves fusion gun and nuclear missile hits (rounded down), removes automatic radiation hit from fusion and nuclear missile attacks.	50	50
Gravitic Field	13	Uses gravitic pulses to deflect incoming attacks, halving the hits from all weapons, but imposes a DM-1 on all outgoing attacks. At TL14, ignore the attack penalty.	100	100
Force Field	16	Ignores one attack, regardless of its power; this depletes the shield. Roll 1D on the following round. The Field regenerates on 4-6. Check each round until it regenerates.	200	300

Ship Crew

All vessels require a crew to operate and maintain the ship. A single person can run a 100-ton ship if they have the requisite skills, though a larger crew is advisable. Larger ships require larger crews.

Small Craft Crew

Each small craft requires a pilot, who can also fire the small craft's weapons. A dedicated gunner allows more complex gunnery actions, as given in the [Space Combat chapter](#).

Ship Crews

Any ship requires a **pilot** to fly and steer the ship, as well as plot its course and calculate jumps. These tasks all require the Pilot skill. Military ships often have 3 pilots, working in four or eight hour shifts for constant monitoring of the flight controls and sensors, when not in jump space.

Some civilian ships and all military ships have a **sensor operator**, using the Computer skill. On smaller civilian ships, the pilot often fulfills this role, though this limits the utility of sensors in emergency or combat. All military ships carry a sensor operator, and sometimes at least three of them to ensure round-the-clock sensor monitoring.

All ships require one **engineer** per 35 tons of drives and power plant. Ships with less than 35 tons of drives and power plant, as well as small craft, do not require dedicated engineers, as their drives are small enough for the Pilot to handle during flight. However, an Engineer may be beneficial in ship combat. Engineers need the Engineering and Repair skills.

Any ship carrying passengers requires one or more **stewards**. See the discussion of [Stewards](#) in the Ship Revenue section.

Larger ships must have a **medic** to tend to the health of passengers and crew. Even ships without passengers often carry a medic to maintain the crew's health and handle medical emergencies. There must be one medic per 50 crew and passengers carried, including low passengers. Dedicated medbays require additional medical staff.

Each gun turret requires a **gunner** to operate it. Weapon bays require two gunners, while main guns require ten gun crew-members each. Each shield requires one gunner. Ships with Model/2 or better electronics may **automate** turrets: one turret per Sensor DM bonus (including DM+0) can be automated. For example, a ship with sensor bonus DM+2 could automate three turrets; the computer has a Gunnery-1 skill. Weapons bays, main guns, and screens cannot be automated. In accordance with fleet doctrine, most military craft prefer living gunners for all weaponry and defenses.

Military ships often carry star troopers, as well as flight crew – one **pilot** and one **support crew** per small craft on board. Larger civilian ships often have a **purser** and **security staff** aboard as well. Note that small craft pilots and service personnel are **optional** – many civilian starships do not have such dedicated personnel for their small craft.

All ships have a **captain**, though on smaller ships this is usually a part-time job performed by the pilot in addition to their regular duties. A dedicated captain is ideal for combat vessels and all-but-required on all military vessels.

Accommodations

The standard accommodations for ship crews are one **stateroom** per crew member. A stateroom displaces 4 tons and costs MCr0.5. A ½ stateroom is often used on small craft and system ships. It is single occupancy only. It displaces 2 tons and costs MCr0.25.

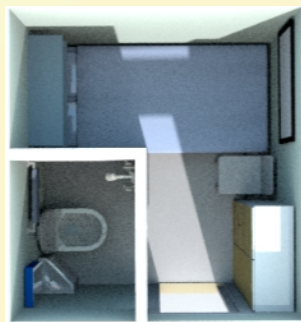
Military ships and more rugged freighters often institute a policy of **double occupancy**: housing two crew members or passengers in each stateroom. This does not increase the stateroom cost but is quite cramped. Highly skilled or senior civilian crew members and military officers usually get their own staterooms. Double occupancy for all crew except for the bridge crew or even for just the captain is standard practice on smaller military ships.

High and Middle Passage passengers require their own staterooms. Steerage class passengers always travel in double occupancy, unless the ship takes off with an odd number of Steerage class passengers, in which case the captain will organize a draw and one Steerage class passenger will have their own stateroom at no additional cost.

Cryotubes carry Low Passage passengers in cold sleep. Cryotubes also serve as emergency transport and for carrying prisoners or captured lifeforms. A cryotube displaces 0.5 tons and costs MCr0.05.

Emergency cryotubes carry four persons each, who all share the same risky revival throw as noted in the Passage Section. They serve in emergencies, as well as for transporting large livestock. Most polities forbid carrying passengers in emergency cryotubes in non-emergency situations. Each displaces 1 ton and costs MCr0.1

½ Stateroom



Typical starship stateroom



Additional Components

Additional Components		
Component	Tonnage	Cost (MCr)
Airlock, Additional	1	0.2
Armory (per 10 Star Troopers)	2	0.5
Automed	1	1
Breaching tube	3	3
Catalyst processors (per 5 tons/day)	1	0.1
Catalyst scoops	-	0.1
Catalyst collapsible storage tanks	1% of total capacity	Cr500 per ton of capacity
Galley	Included	Included
Medbay	Included	Included
Medlab (dedicated; per 2 patients)	8	16
Laboratory	4	4
Ship's locker	Included	Included
Small craft or vehicles	Craft tonnage	As the small craft
Escape pod (per person)	0.5	0.1
Food Synthesizer	1	0.1
Mining Equipment	10	2
Probe drones (per 5 drones)	1 ton per 5 drones	0.2
Repair drones	1% of hull	0.5

Each ship is built with one standard **airlock** per 100 tons as part of the hull at no additional cost. Small craft do not come with airlocks standard. Additional airlocks are 1 ton and cost MCr0.2 each.

Military ships often carry an **armory**, providing military-grade small arms, armor, and equipment. Each 2-ton block of armory costs MCr0.5 and equips 10 Star Troopers.

An **Automed (TL 14)** is an all in one medical system capable of diagnosing and treating any illness, injuries and other medical conditions with a skill of Medical 3 and an Int of 10. It can revive characters that have been dead less than 30 minutes.

A ship may use a **breaching tube** to breach and board a disabled enemy ship, that is, an enemy ship without an operable Maneuver Drive. A breaching tube takes up 3 tons of space and costs MCr3.

Catalyst processors can refine unrefined catalyst into refined catalyst. A ton of catalyst processing equipment can refine 5 tons of liquid hydrogen per day. Processors cost MCr0.1 per ton.

All lifting body ship hulls have built-in **catalyst scoops** for collecting hydrogen catalyst from gas giants. For ships with standard hulls, installing catalyst scoops cost MCr0.1 and do not displace any tonnage.

Catalyst collapsible storage tanks. These are tanks that are used to store unrefined catalyst in a cargo hold to be processed in flight. They collapse to 1% of capacity when not in use.

A **Food Synthesizer** produces all types foodstuffs out of elemental chemicals for 14 people/day. Cutting life support costs by 25%. It is the norm for TL 14+ societies.

Every ship has a **galley** (kitchen and lounge) and a **medbay**. These are included in stateroom tonnage and costs. A medbay counts as a medical facility for the purposes of healing wounds. A basic medbay accommodates up to 2 patients. A dedicated **medlab**, costing MCr2 and displacing 8 tons, represents better, hospital-grade care. Medlabs grant DM+1 to all Medicine tasks and allow doctors to perform Trauma Surgery without penalties for working in the field. Each additional 2 tons and MCr0.25 allocated allows another patient. Medlabs require one medic per 4 patients.

A **laboratory** is useful for scientific research, and comes in 4-ton blocks, each costing MCr1. A laboratory provides DM+1 to Science throws by the scientist using it. At the Referee's discretion, a laboratory is required for advanced or obscure scientific investigation.

Every ship includes a **ship's locker**, which contains various technical and survival supplies, space suits, and civilian small arms such as pistols and shotguns. We recommend that the Referee determine the exact contents of the ship's locker only when the players wish to access it. In any case, access to the ship's locker is usually controlled by biometric lock, keyed to the captain or other senior crew.

Ships may carry **small craft** and **vehicles**. The space allocated for a small craft or vehicle does not include space for spare parts or other maintenance equipment. All spares and equipment must be carried as cargo.

Most starships carry **escape pods**, which displace 0.5 tons and cost MCr0.1 per passenger or crew.

Mining Equipment, displace 10 tons and cost MCr2 per drone bay, and allow a ship to mine asteroids. Each bay of mining equipment includes the mining drones and machinery to process 1Dx10 tons of asteroid per working day. The tonnage allocated also includes ore handling machinery, allowing the ship to take on ore and transfer it to the cargo bay.

Probe drones, displacing 1 ton and costing MCr0.2 per 5 drones, are designed for planetary surveying. The ship drops them from orbit in disposable re-entry capsules; they must be recovered manually. Alternatively, a probe drone in orbit can serve as a survey and communication satellite.

Repair drones displace 1% of the ship's hull and cost MCr0.5 per ton of drones. The complement of drones allows the ship to make one free repair attempt per space combat round. The drones have Repair 1 and Engineering 1 and can only perform or assist the Damage Control action. See the Space Combat chapter. Cost includes software.

Carried Vehicles

Starships may carry regular vehicles on board. Space allocated for vehicles includes access space and space for basic maintenance equipment. Parts for maintenance need to be stored separately.

Cargo and Final Cost

The designer can now allocate any remaining tonnage to the ship's cargo bay. Add up the cost of various components for the ship's final cost. Mass-produced ships enjoy a 10% discount to the final cost. The question whether a ship is mass-produced is left to the Referee. Custom ships designed by players should not be mass-produced, as compared to standard models pre-designed by the Referee.

Ship Presentation Format

Below is the default ship stat block format used in Spaceships & Star Systems.

Template

The ship's description is here.

Ship Type	Tonnage: in D-Tons	Armor: Listed here	Hull configuration
Maneuver: in Gs of thrust	Jump drive: rating	P-Plant: Rating	
Computer: Model, DM	Armament: Listed here by turret		
Fittings: Listed here. Ammunition included			
Crew: listed here, including their occupancy arrangement			
Cost: in MCr; Construction Time: in weeks			

TL12 100-ton Frontier Trader

This trader is potentially a very profitable ship in areas not served by scheduled freighters.

Starship	Tonnage: 100	Armor: None	Standard
Maneuver: 1-G	Jump: 1	P-Plant: 1	Catalyst: 10 tons
Computer: 1, DM-2	Armament: 1x double turret		
Fittings: 1 catalyst processor, 2 staterooms, 15 cryotubes, Cargo 54.1			
Crew: 1 pilot/engineer			
Cost: MCr27; Construction Time: 52 weeks			

TL 12 10,000 Ton Freighter

These freighters ply the trade routes between hi-pop worlds in frontier areas on scheduled runs mostly.

Starship	Tonnage: 10,000	Armor: none	Distributed
Maneuver: 1	Jump: 1	P-Plant: 1	Catalyst 1,000 tons
Computer: 1, DM-2	Armament: 2 x Double Turrets		
Fittings: 29 Catalyst processors, 20 ton launch, 25 staterooms, 2 ECTs, Cargo 8,098			
Crew: 23, Captain, First mate, Pilot, Sensor Op, 2 nd Mate, Gunner, Deck Hand, Chief Eng., Ast. Chief Eng., 11 Engineers, Purser, Medic, Steward.			
Cost: in MCr1,651; Construction Time: 300 weeks			

TL 12 300 Ton System Patrol Boat

This vessel generally patrols near jump points or other areas in the system looking for pirates or smugglers.

System Ship	Tonnage: 300	Armor: Heavy	Standard
Maneuver: 6		P-Plant: 6	
Computer: 4, DM +2	Armament: 2 x Plasma Cannons, 1 Torpedo Launcher		
Fittings: 20 Ton Launch, Automed, 30 staterooms, 2 cryotubes, 2 ECTs, Medlab, Breaching Tube, Cargo 65			
Crew: 26, Captain, 1 st Lieutenant, Chief Engineer, Gunnery Officer, 6 Star Troopers, 6 engineers, 3 pilots, 3 sensor ops, 3 gunners, 1 medic, 1 steward			
Cost: in MCr160; Construction Time: 52 weeks			

TL 12 300 Ton Pirate

A ship that preys on others outside (and sometimes, inside) civilized space.

Starship	Tonnage: 300	Armor: Light	Standard
Maneuver: 3	Jump: 2	P-Plant: 3	Catalyst 60 tons
Computer: 4, DM +2	Armament: Triple Turret, 2x Triple Pop up Turrets		
Fittings: 6 Staterooms, 2 Emergency cryotubes, Scoops, 2 Catalyst processors, Stealth, Breaching tube, Cargo 127			
Crew: 7			
Cost: 140; Construction Time: 52 weeks			

TL 15 100 Ton Frontier Courier

This Scout vessel delivers communications and sometimes officials to worlds in frontier areas.

Starship	Tonnage: 100	Armor: Light	Standard
Maneuver: 2	Jump: 3	P-Plant: 3	Catalyst 30 tons
Computer: 3, DM +1	Armament: Triple Turret		
Fittings: 4 Staterooms, Automed, ECT, Repair Drones, 2 Catalyst Processors, Catalyst scoops, Cargo 20			
Crew: 1 Pilot/Engineer			
Cost: in MCr33.2; Construction Time: 52 weeks			

TL 12 150 Ton Free Trader

The most common type of tramp freighter found outside of core systems.

Starship	Tonnage: 150	Armor:	Standard
Maneuver: 1	Jump: 1	P-Plant: 1	Catalyst 15 tons
Computer: 1, DM -2	Armament: Double Turret		
Fittings: 6 staterooms, 15 cryotubes, 1 catalyst processor, Cargo 80.4			
Crew: 1 Pilot			
Cost: 32.3; Construction Time: 52 weeks			

TL 12 100 Ton Prospector

A mining ship that prospects asteroid belts

Starship	Tonnage: 100	Armor:	Standard
Maneuver: 2	Jump: 2	P-Plant: 2	Catalyst 20 tons
Computer: 2, DM +0	Armament: Single turret Beam blaster		
Fittings: 2 Staterooms, 2 Escape pods, Scoops, 2 Catalyst processors, 5 probe drones, Cargo 25.4, 10 tons mining machinery, Gig			
Crew: 1			
Cost: 33.4; Construction Time: 52 weeks			

TL 12 200 Ton Research vessel

A mobile science laboratory used by governments, NGO's & corporations.

Starship	Tonnage: 200	Armor:	Standard
Maneuver: 2	Jump: 2	P-Plant: 2	Catalyst 40 tons
Computer: 2, DM +0	Armament: Single turret Beam blaster		
Fittings: 12 Staterooms, 12 Escape pods, 12 cryotubes, Scoops, 2 Catalyst processors, 5 probe drones, 8 labs, Gig, Cargo 23.8			
Crew: 1			
Cost: 84.7; Construction Time: 52 weeks			

TL 12 100 Ton Yacht

A luxury vessel for the very wealthy.

Starship	Tonnage: 100	Armor:	Standard
Maneuver: 2	Jump: 2	P-Plant: 2	Catalyst 20 tons
Computer: 2, DM +0	Armament: 2 ton hardpoint reserved		
Fittings: 10 Staterooms (2 joined to make luxury suite), 10 Escape pods, 4 Emergency Cryotubes, Scoops, 2 Catalyst processors, Cargo 6.4			
Crew: 1			
Cost: 29.5; Construction Time: 52 weeks			

Small Craft

Gig

Ship's Auxiliary Craft

Small Craft	Tonnage: 10	Armor:	Standard
Maneuver: 2	Jump:	P-Plant: 2	
Computer: DM -4	Armament:		
Fittings: 1 person cockpit, air lock, Cargo 6.3			
Crew: 1			
Cost: 2.8; Construction Time: 26 weeks			

Ketch

Fast Transport

Small Craft	Tonnage: 20	Armor:	Standard
Maneuver: 6	Jump:	P-Plant: 6	
Computer: DM -4	Armament:		
Fittings: 1 person cockpit, air lock, 6 passenger couches, Cargo 7			
Crew: 1			
Cost: 12.8; Construction Time: 26 weeks			

Pinnacle

Long Distance Transport

Small Craft	Tonnage: 50	Armor:	Standard
Maneuver: 2	Jump:	P-Plant: 2	
Computer: DM -4	Armament:		
Fittings: 1 person cockpit, air lock, ½ stateroom, Cargo 39.4			
Crew: 1			
Cost: 13.73; Construction Time: 26 weeks			

Cutter

PassengerTransport

Small Craft	Tonnage: 95	Armor:	Standard
Maneuver: 1	Jump:	P-Plant: 1	
Computer: DM -4	Armament:		
Fittings: 1 person cockpit, air lock, 40 ½ staterooms, Cargo 5.5 (35 passengers)			
Crew: 5, (3 Pilots, 2 Stewards)			
Cost: 27.6; Construction Time: 26 weeks			

Alternate FTL Drive

Hyper-Drive

A hyper-drive moves the ship into an alternate dimension called hyper-space. The drive is rated by how many parsecs (3.26 light years) the ship can travel per week (7 days) while in hyper-space. Drives are rated 1 through 6. As with a Jump drive one must be far enough away from a celestial body before engaging the hyper-drive. This is generally 100 diameters in distance. The shortest amount of time a ship may travel in hyper-space is 12 hours, traveling a corresponding distance based on Drive size. Courses follow a straight line only. If your course causes you to enter the 100 D limit of a star or planet the ship returns to normal space at that point. So a short hop in hyper-space might be required to clear the local system star's 100 D limit in order to get a straight course for your final destination.

Drive size & cost: The size of the hyper-drive is calculated by taking a Jump drive size of the same rating for the same ship tonnage and then adding the catalyst tankage required for one jump. E.g. A J-1 drive for a 100 ton ship is 3 tons in size. Requiring 10 tons in catalyst tankage for one jump. Therefore a Hype-drive with a rating of 1 for a TL 12, 100 ton ship would be 13 tons. Apply any TL tonnage drive adjustments to the total of the two figures, then calculate cost. The ship's power plant rating must be equal to or greater than the hyper-drive rating. The cost of a hyper-drive is **MCr0.5** per ton.

Entering Hyper-Space Procedure

1. Calculate Plot: Entering hyper-space requires a course calculation called a "plot". Starports rated C or better sell up-to-date plots to nearby populated worlds for Cr1,000 per parsec. A skilled pilot can also calculate their own plot. Throw Piloting/EDU 6+ to calculate a plot, apply a negative DM equal to the number of weeks the ship will travel; this takes 1Dx6 minutes (i.e., 1D ship combat turns). Add any positive DM from your Electronics system. It is possible to rush this calculation, to guarantee that it will only take one ship combat turn, but the throw is Piloting/EDU 10+. A failed check requires another attempt, or the ship will have a hyper-space accident (see below). It is possible to calculate a plot in advance, but it will become obsolete within 1D days.

2. Engage Drive: Once the plot is ready, the ship's engineer must throw Engineering/EDU 8+ to engage the Hyper-Drive. This procedure takes a second and can be done in the same round as the pilot's throw itself.

3. Enter hyper-space: To succeed, throw 2D with the following DMs. A throw of 0 or less causes an accident. A bad plot causes an automatic accident.

DM+the Effect of the Engineering throw to Engage the Drive DM-1 per day the plot is out of date. DM-2 if the Hyper-Drive is damaged. DM-8 if within a hundred-diameter limit of the nearest planet or star

4. In Case of an Accident: An accident causes a [Critical Hit](#) on the ship (see the space combat rules) and may destroy it. Furthermore, the ship travels 1D x 1D parsecs in a random direction.

Hyper-Drive Rating	Light Years per day	Light Years per 12 hours
1	0.47	0.24
2	0.93	0.47
3	1.4	0.7
4	1.86	0.93
5	2.33	1.17
6	2.79	1.4

Grav Vehicle Design

Displacement Tons and Compartments

Chassis and other vehicle components are measured by their displacement volume. For ships and small craft, displacement volume is measured in the volume of compartment that is displaced by one metric ton of hydrogen which is 14 cubic meters, referred to in this design sequence as displacement tons or simply tons. Because the components for vehicles are often fractions of a ton, the system uses an artificial measure of volume to make things easier. A compartment in this design system is equal to one-twelfth of a displacement ton; i.e. there are 12 compartments in one ton. Or, roughly 1,170 liters of volume per Compartment.

The Price Impact of Modifications

Some modifications to a vehicle component, often classified under Options that can be applied to that component, modify the original price of that component. Modifications that decrease the price of a vehicle component cannot lower it below 25% of the original price.

Vehicle Design Checklist

The Grav Vehicle Design follows a process.

1. Choose a Vehicle Chassis
 - a. Determine chassis code
 - b. Determine open or closed chassis & any options
 - c. Install armor (optional)
2. Choose locomotion/propulsion
3. Choose power supply
4. Determine fuel requirements
5. Choose vehicle's controls
6. Choose vehicle's communications system (optional)
7. Choose vehicle's sensor package (optional)
8. Choose vehicle's computer system (optional)
 - a. Choose computer software
9. Determine number of required crew
 - a. Choose accommodations (cockpit, cabin, extended accommodations)
10. Determine additional components (optional)
11. Determine turrets, fixed mounts, etc. (optional)
 - a. Determine weapons (optional)
12. Allocate remaining compartment to cargo
13. Calculate final price and construction time
 - a. Apply Std Design Discount of 10% (optional)

Vehicle Chassis

The vessel's chassis is the shell in which all other components are placed. An unarmored vehicle's construction time is based on its chassis size, as outlined on the Vehicle Chassis by Displacement table. To find the construction time for armored vehicles, simply multiply the vehicle's base construction time by the amount of additional armor the vehicle will possess. For example, a 10-ton Armored Fighting Vehicle (AFV) with **light armor** would take (base of 90 hours, times 5, equals) 450 hours, or 19 days, assuming round-the-clock construction. The same vehicle with **heavy armor** would take twice the time as long as a lightly armored one.

Custom-Made Vehicles: The construction time listed is for mass production of a standard design. A custom- made vehicle takes approximately ten times as long to construct.

Vehicle Chassis by Compartments

Chassis Code	Tons	Compartments	Price (Cr)	Construction Time (hours)	Size Example
1	0.1	1	1,450	1	8 Standard Moving Boxes
2	0.25	3	1,600	2	Motorcycle
3	0.5	6	1,850	5	
4	0.75	9	2,100	7	Compact Car
5	1	12	2,400	9	Mid-Size Car
6	2	24	3,550	18	Passenger Van
7	3	36	4,850	27	Standard Freight Shipping Container (1CC)
8	4	48	6,250	36	Air/Car
9	5	60	7,800	45	Military Tank
A	6	72	9,550	54	Speeder
B	7	84	11,350	63	
C	8	96	13,350	72	Semi-Trailer
D	9	108	15,450	81	
E	10	120	17,750	90	ATV
F	11	132	20,150	99	
G	12	144	22,650	108	
H	13	156	25,350	117	
J	14	168	28,150	126	
K	15	180	31,100	135	
L	16	192	34,200	144	
M	17	204	37,400	153	
N	18	216	40,750	162	
P	19	228	44,250	171	
Q	20	240	47,900	180	

Vehicle Configuration

A vehicle may have one of two configurations – Closed or Open.

Closed Vehicles: Closed vehicles grant cover to the occupants – unless the description mentions otherwise civilian vehicles grant ½ soft cover and military vehicles full hard cover. Only a few people in a closed vehicle can shoot out, depending on the number of windows or other firing ports and the internal space available. Unless the description mentions otherwise, up to two people can fire into each arc from a civilian vehicle and one person in each arc in a military one.

Note that closed vehicles are not sealed or airtight. They are just enclosed, offering some basic protection to the occupants within the vehicle. In order to provide complete atmospheric protection, the appropriate Environmental Protection System(s) must be installed, as provided in under Vehicle Configuration Options. **Open Vehicles:** Open vehicles possess an open passenger area, which reduces the final price by 10% of the Base Price. Vehicles that travel faster than 400 kph cannot have an Open configuration. Open vehicles grant no cover to the passengers. Any passenger in an open vehicle can shoot (or otherwise attack) in any direction.

Vehicle Configuration

Configuration	Chassis Price Modifier	Notes
Closed	x1	
Open	X0.9	

Vehicle Configuration Options

The following are options that can be added to a vehicle's configuration.

Corrosive Environmental Protection System (TL 9): The Corrosive Environmental Protection System can be installed in any vehicles with a closed chassis to safeguard the vehicle and its crew in corrosive environments. Corrosive Environmental Protection protects against corrosive environments, very hot or very cold environments, radiation, poisons and bacteriological threats. This system takes up 6 compartments and costs Cr10,000 per Compartment of chassis. This system requires the purchase of Life Support.

Hostile Environmental Protection System (TL 7): The Hostile Environmental Protection System can be installed in any vehicles with a closed chassis to safeguard the vehicle and its crew in hostile environments. Hostile Environmental Protection protects against very hot or very cold environments, radiation, poisons and bacteriological threats. This system takes up 3 compartments and costs Cr5,000 per Compartment of chassis. This system does not require Basic Life Support, although it can prove highly useful.

Insidious Environmental Protection System (TL 9): The Insidious Environmental Protection System can be installed in any vehicles with a closed chassis to safeguard the vehicle and its crew in insidious environments. Insidious Environmental Protection protects the vehicle and crew from insidious atmospheres for 5 days, before Hull/Structure integrity begins to fail at one point per day, as well as providing protection against very hot or very cold environments, radiation, poisons and bacteriological threats. This system takes up 6 compartments and costs Cr50,000 per Compartment of chassis. This system requires the purchase of Life Support.

Open Cargo Bed: Reduces the chassis price by 20%. Airplanes, jets and hypersonics cannot have Open Cargo Beds. Open configuration vehicles with an Open Cargo Bed combined reduce the chassis price by 25%.

Open Frame: An Open Frame means that no additional armor can be fitted on the vehicle. However, this reduces the chassis price by 50%.

Self-Sealing (TL 9): A self-sealing chassis automatically repairs minor breaches, and prevents chassis hits from leading to explosive decompression in vacuum environments (if the Vacuum Environmental Protection System is installed). It costs Cr10,000 per ton of chassis.

Streamlined: Streamlining a thrust-based vehicle increases the chassis price by 300%. Streamlining multiplies the Base Speed of the vehicle by 5. Streamlining can be applied to any thrust-based vehicle with a closed configuration. Streamlining may not be retrofitted; it must be included at the time of construction.

Submersible: Submersible may be applied to any grav vessel, allowing it to submerge below the ocean's surface. The Submersible configuration option increase the chassis price by 500%. Base Speed for a submersible reflects the vessel's speed underwater. Submersibles are rated by their Safe Dive Depth and Crush Depth, as determined by the vessel's Tech Level. These values are calculated for a Size 8 world. For every point of world size difference, up or down, add or subtract (respectively) 10% from the Safe Dive and Crush Depth values. When increasing Safe Dive/Crush Depth for a submersible, for every doubling of the Safe Dive and Crush Depth, the vehicle loses half of its remains compartments (rounded off) to ballast to bring the vehicle lower into the ocean. Each doubling costs of 100% of the chassis price of the submersible. An open chassis submersible, such as a dive sled, does not protect its drivers or passengers from the pressures of the depths of the ocean. All submersibles get Basic Life Support and Hostile Environment Protection for free.



Table: Submersible Safe Dive Depth and Crush Depth by Tech Level

Tech Level	Safe Dive Depth (m)	Crush Depth (m)
4-5	50	150
6-8	200	600
9-11	600	1,800
12-14	2,000	6,000
15-16	4,000	12,000
17	8,000	24,000

Vacuum Environmental Protection System (TL 6): The Vacuum Environmental Protection System can be installed in any vehicles with a closed chassis to safeguard the vehicle and its crew under vacuum conditions. Vacuum Environmental Protection protects against vacuum conditions, very hot or very cold environments, radiation, poisons and bacteriological threats. This system takes up 3 compartments and costs Cr10,000 per Compartment of chassis. This system requires the purchase of Life Support.

Vehicle Armor

A vehicle's armor decreases ambient radiation exposure by 50 rads for light armor and 100 rads for heavy. (This does not apply to meson attacks and nuclear missiles, which bypass the armor or breach the chassis to deliver their radiation hits.) Note that these armor values are measured on the Personal Combat scale.

Light Armor

The following table lists how many tons of space Light Armor occupies and how much it costs by Tech Level.

Light Armor Technology

Armor Type	TL	Tonnage	Cost
Titanium Steel	7	12.5% of vehicle volume	12.5% of base chassis cost
Composite Alloy	8	10% of vehicle volume	20% of base chassis cost
Crystaliron	10	6.5% of vehicle volume	25% of base chassis cost
Superdense	12	5% of vehicle volume	30% of base chassis cost
Bonded Superdense	14	4% of vehicle volume	40% of base chassis cost
Collapsed Superdense	16	3.5% of vehicle volume	50% of base chassis cost

For example, a lightly armored TL14 grav carrier might take Bonded Superdense armor. This would take up 4% of the chassis volume (in compartments, minimum 2 compartments) and cost 40% of the base price of the chassis. Taking **heavy armor** would take up 8.5% of the vehicles chassis and cost 80% of the base chassis price.

Heavy Armor Technology

Armor Type	TL	Tonnage	Cost
Titanium Steel	7	25% of vehicle volume	25% of base chassis cost
Composite Alloy	8	20% of vehicle volume	40% of base chassis cost
Crystaliron	10	12.5% of vehicle volume	50% of base chassis cost
Superdense	12	10% of vehicle volume	60% of base chassis cost
Bonded Superdense	14	8.5% of vehicle volume	80% of base chassis cost
Collapsed Superdense	16	7% of vehicle volume	100% of base chassis cost

Vehicle Armor Options

The following are options that can be added to a vehicle's armor.

Electrostatic Armor (TL 9): This armor can be set to generate an electrostatic field that, when triggered by a person or creature, inflicts 6D6 damage. The armor may discharge twice before needing to recharge, and completely recharges after six seconds without a discharge. Electrostatic Armor requires one Compartment for the supporting capacitor and associated electronics, and costs Cr10,000.

Stealth (TL 11): A stealth coating absorbs radar and lidar beams, and also disguises heat emissions. This imposes a -4 DM on any Comms rolls to detect or lock onto the vehicle. Adding Stealth costs Cr100,000 per ton of chassis, and can only be added once.

Vehicle Drives

All grav vehicles are generally built with at least one source of power (commonly referred to as the engine or power plant) and one source of propulsion to provide movement for the vehicle, grav-based. Within this system, all power plants and propulsion systems are categorized as drives.

Power Plants: Within this design system, the values of the Vehicle Drive Costs tables make certain assumptions. Power plant values represent the fusion engine. The Vehicle Power Plant Types table offer adjustments to represent the impact of alternate power sources. Vehicles that will be operating in vacuum or Trace atmospheres must use a EM-Fission reactor. Fusion creates too much waste heat to remove without a convective cooling utilizing the atmosphere.

Propulsion Systems: The grav-based propulsion system values represent the suspension of grav vehicles.

Base Speed: The base speed of a vehicle is determined by its propulsion drive performance, as outlined in the Vehicle Base Speed by Drive Performance table. Base speed is measured in kilometres per hour (kph), unless otherwise specified. A vehicle with a propulsion system must have a power source with a drive code equal to or greater than that of the vehicle's propulsion. For a grav-based propulsion system, a zero (0) means that the thrust from the propulsion system is capable of supporting the vehicle itself in position, hovering in place, but cannot perform any actual propulsion. This allows vehicle designers to create vehicles that only move down or remain stationary, but can't move up or forward at any significant speed. This is primarily used for robots and drones that need to remain stationary in turbulent circumstances.

Table: Vehicle Power Plant Types

Power Plant Type	TL	Vol. Mod	Price Mod.	Fuel
Fission EM-Voltaic	9	x1.5	x1.75	Radioactives
Early Fusion	9	x1	x1.5	Deuterium/Tritium
Fusion	12	x0.75	x1	Deuterium
Advanced Fusion	15	x0.5	x2	Protium

Table: Vehicle Propulsion Types

Propulsion Type	TL	Type	Volume Mod.	Price Mod.	Examples
Grav	9	Thrust	x1	x1	Air car
Advanced Grav	12	Thrust	x0.75	x2	Grav Cycle
Extreme Grav	15	Thrust	x0.5	x4	G/APC

Table: Vehicle Drive Costs

Drive Code	Power Plant Compartments	Price (Cr)	Grav Drive Compartments	Price (Cr)
A	0.11	125	0.12	1200
B	0.26	300	0.3	3000
C	0.4	450	0.5	5000
D	0.75	850	0.75	7500
E	1.25	1425	1.4	14000
F	1.75	1975	2	20000
G	2.25	2550	2.5	25000
H	2.75	3100	3	30000
J	3.5	3950	4	40000
K	4	4500	4.5	45000
L	4.5	5075	5.25	52500
M	5.25	5925	6.25	62500
N	6.75	7600	8	80000
P	7.5	8450	8.5	84000
Q	8.5	9575	10	100000
R	9.5	1070	11.5	115000
S	10.5	11825	12	120000
T	12	13500	13.5	135000
U	13.5	15200	16	160000
V	15.5	17450	18	180000
W	18.5	20825	22	220000
X	21.5	24200	26	260000
Y	25.5	28700	30	300000
Z	31	34875	36	360000



Table: Drive Performance by Chassis Code, Smaller Chassis

Drive/Chassis	1	2	3	4	5	6	7	8	9	A	B	C
A	4	1	0	-								
B	-	4	2	1	1	0	-					
C	-	6	3	2	1	0	-					
D		-	5	3	2	1	0	0	-			
E			-	6	4	2	1	1	0	0	0	0
F				-	6	3	2	1	1	1	0	0
G					-	4	2	2	1	1	1	1
H					-	5	3	2	2	1	1	1
J					-	6	4	3	2	2	1	1
K						-	5	3	3	2	2	1
L						-	5	4	3	2	2	2
M						-	6	5	4	3	2	2
N							-	6	5	4	3	3
P								-	5	4	4	3
Q								-	6	5	4	4
R									-	6	5	4
S										-	6	5
T											-	6
U												

Table: Drive Performance by Chassis Code, Larger Chassis

Drive/Chassis	D	E	F	G	H	J	K	L	M	N
H	1	1	0	0	0	0	0	0	0	0
J	1	1	1	1	1	0	0	0	0	0
K	1	1	1	1	1	1	1	0	0	0
L	1	1	1	1	1	1	1	1	1	0
M	2	2	1	1	1	1	1	1	1	1
N	2	2	2	2	2	1	1	1	1	1
P	3	2	2	2	2	2	1	1	1	1
Q	3	3	3	2	2	2	2	2	1	1
R	4	3	3	3	2	2	2	2	2	2
S	4	4	3	3	3	2	2	2	2	2
T	5	4	4	3	3	3	3	2	2	2
U	5	5	4	4	4	3	3	3	3	2
V	6	6	5	5	4	4	4	3	3	3
W		-	6	6	5	5	4	4	4	4
X				-	6	6	5	5	5	4
Y						-	6	6	5	5
Z									-	6

Table: Vehicle Base Speed by Drive Performance

Grav Drive Type	TL	1	2	3	4	5	6
Grav	9	100	200	300	400	500	600
Advanced Grav	12	200	400	600	800	1000	1200
Extreme Grav	15	400	800	1200	1600	2000	2400

Vehicle Fuel

Every vehicle carries fuel, unless it derives its power from an external source. All fuel calculations are calculated based on the power plant's Drive Code and Power Plant Type, as well as the expected period of operation without refuelling. The Vehicle Power Plant Fuel Requirements table lists the power plant fuel requirements for early fusion power plants. To calculate fuel consumption for the other fusion power plant types use the Vehicle Fuel Consumption by Power Plant Type table for the modifiers to apply to the figure listed for early fusion power plants.

Vehicles are designed to operate for a variety of durations, ranging from a few hours to days or even weeks. For your convenience, the Vehicle Power Plant Fuel Requirements table provides calculated values for the fuel per week, per day and per hour, by Drive Code. For purposes of describing fuel volume in a vehicle's description, assume that the number of compartments of fuel is equivalent to the kilolitres of volume it occupies. One Compartment is equal to 1,166 liters. Multiply the Compartment value by 1,166 to determine volume in liters. E.g. a compartment size of 0.234 = 273 liters.

Range and Cruising Speed:

The amount of fuel a vehicle carries determines its Range at its maximum speed. The cruising speed of a vehicle is assumed to be 75% of the vehicle's maximum speed and if the vehicle maintains this rate of movement, its Range will increase by 50% due to fuel efficiency.

Table: Vehicle Agility Modifiers

Vehicle Type	Modifier
Airplane	-2
Airship	-4
Grav Vehicle	0
High speed Grav Vehicle	+1
Supersonic Grav Vehicle	+3
Helicopter	-1
Hovercraft	0
Hypersonic	-2
Jet	-1
Fighter Jet	-0
Supersonic Fighter Jet	+2
Mole	-4
Motorboat	+1
Ocean Ship	-2
Sailing Ship	-3
Submarine	-2
Tracked Vehicle	-1
Train	-4
Walker	+1
Wheeled Vehicle	+2



Size & Power Factors	
Animal-Powered	-2
Wind-Powered	-1
Small (2- tons)	+1
Large (10+ tons)	-1
Huge (20+ tons)	-2
Gargantuan (100+ tons)	-3

Table: Power Plant Fuel Requirements

Drive Code	Compartments	Fuel/Wk	Fuel/Day	Fuel/Hr liters
A	0.11	0.03	5 liters	200 ml
B	0.26	0.09	0.01	600 ml
C	0.4	0.13	0.02	900 ml
D	0.75	0.25	0.04	1.8 liters
E	1.25	0.41	0.06	2.8 liters
F	1.75	0.58	0.08	4 liters
G	2.25	0.75	0.11	5.5 liters
H	2.75	0.91	0.13	6.3 liters
J	3.5	1.16	0.17	8 liters
K	4	1.33	0.19	2.2 liters
L	4.5	1.5	0.21	10 liters
M	5.25	1.75	0.25	11.5 liters
N	6.75	2.25	0.32	15 liters
P	7.5	2.5	0.36	17.5 liters
Q	8.5	2.83	0.4	20 liters
R	9.5	3.16	0.45	22 liters
S	10.5	3.5	0.5	24.5 liters
T	12	4	0.57	28 liters
U	13.5	4.5	0.64	31.5 liters
V	15.5	5.16	0.73	36 liters
W	18.5	6.16	0.88	43 liters
X	21.5	7.16	1.02	50 liters
Y	25.5	8.5	1.21	60 liters
Z	31	10.33	1.48	71 liters

Table: Vehicle Fuel Consumption by Power Plant Type

Power Plant Type	TL	Fuel Mod.	Price/Compartment (CR)	Notes
Fission EM-Voltaic	9	x0.04	8300	For vehicles in vacuum or Trace atmo
Early Fusion	9	x1	40	
Fusion	12	x0.75	40	
Advanced Fusion	15	x0.5	20	

Vehicle Drive Options

The following options are available as modifications on Vehicle Drives.

Additional Drive Systems: A secondary drive system can be installed in a vehicle by purchasing a second propulsion drive. The secondary drive system's performance is limited to one less than that of the primary drive system. The vehicle's Agility suffers a -1 penalty due to design accommodations required to support the additional drive system.

Decreased Fuel Efficiency: Vehicles can be built with decreased fuel efficiency, relying on cheaper parts or less efficient engines to cut costs. Fuel inefficient vehicles multiply the Fuel Mod on the Vehicle Fuel Consumption by Power Plant Type by 1.25 (increasing the fuel consumed by 25%). This reduces the final price of the vehicle by 10% of its chassis price.

Increased Fuel Efficiency: Vehicles can be built with increased fuel efficiency. Fuel efficient vehicles multiply the Fuel Mod on the Vehicle Fuel Consumption by Power Plant Type by 0.9 (reducing the fuel consumed by 10%). This costs 20% of the chassis price.

Vehicle Controls

Unlike starships, vehicles do not have bridges. Instead, vehicles require a control system to allow crew members to control the vehicle. More advanced systems can be installed.

Advanced Controls (TL 9): This is an advanced computer control system with heads-up displays and includes a "GPS" function coupled with a transponder that provides a collision avoidance warning system for terrain and other transponder equipped aerial vehicles.

Neural Link (TL 12): The neural link is a true mind-machine linkage and allows an operator to control the vehicle with their mind alone. No additional special equipment or cybernetic modifications are required. Also has functionality found in Advanced Controls above.

Vehicle Control Systems

Interface	TL	Compartments	Price (CR)	Agility	Initiative
Advanced	9	0.01	1000	1	0
Neural Link	12	0.03	50000	2	2

Robot Brains

Robot Brains can be added to any vehicle with Advanced Controls or better.

Table: Robot Brains

CPU	Compartments	TL	Max Skill Level	Price
Linear	0.01	8	1	10000
Parallel	0.04	10	2	20000
Synaptic	0.04	12	3	50000

Vehicle Control Options

The following option is available as a modification on Vehicle Controls.

Autopilot: Autopilots are available for vehicles at TL 7. Autopilot systems are at skill level 0 at their Tech Level of introduction and increase their skill level by 1 for every two Tech Levels thereafter, to a maximum of 3. Autopilots cost Cr2,000 + Cr5,000 per skill level.

Vehicle Communication Systems

Installing a communication system allows the crew to interact with others. The following system is assumed to use radio for communications. Alternate approaches to communication are covered in the *Alternative Communicator Types table*. Vehicle communication systems are optional, but often highly recommended, particularly for military vehicles.

Two way radio: TL 8 Compartments: 0.003 Price: Cr1,000 Range: 5,000 km

Alternate Communicator Types

Type	TL	Size Mod.	Price Mod.	Notes
Laser	8	x2	x3	Requires clear Line of Sight
Maser	10	x4	x6	Like laser but cuts through aerosols & smoke
Meson	11	x10	x50	Can't be jammed/blocked but can't use while moving

Sensors

Sensors	TL	Compartments	Price	Sensor DM	Max Range
Sonar	8	1	Cr1,000	+0	5 Km
Standard	8	1	Cr2,000	-4	500 Meters
Basic	9	1.2	Cr4,000	-2	5 Km
Military	10	5	Cr20,000	+0	50 Km
Advanced	11	8	Cr50,000	+2	500 Km
Very Advanced	12	15	Cr100,000	+4	5,000 Km

Vehicle Armaments

Military vehicles, as well as civilian vehicles in certain star systems, often carry weapons. Vehicles carry weapons in two ways: weapon mounts & vehicular turrets.

Weapon Mounts

A weapon point is a location on a vessel or vehicle designed to carry an external or internal load. A vehicle's chassis or a vessel's hull can support one weapon point per 60 Compartments, with a minimum of one. For example, a 24 - compartment vehicle has one weapon point, while a 120 Compartment vehicle would have two weapon points.

Weapon mounts come in three varieties: fixed, ring and pintle. A fixed mount is permanently affixed to the chassis, and cannot move or be removed. A pintle mount is effectively a post upon which the weapon is affixed, and the weapon pivots on the point of attachment to aim and fire. A ring mount is effectively a ring of metal that serves as the track upon which the weapon traverses as the weapon is aimed and fired. Only smaller weapons listed in the Common Heavy Weapons can use these mounts. Something one soldier could carry and use if not vehicle mounted, even if with a some difficulty.

A weapon mount may be attached to an open weapon point on the vehicle, and a weapon point may only support one weapon mount. Weapon mounts do not offer any sort of fire control. Weapon mounts do not take up any Compartments themselves, nor do they add any extra Compartments to a vehicle. Weapons in a weapon mount still count against the available Compartments in a vehicle.

Fixed Mount weapons cannot move, and so are limited to firing in one direction (normally straight ahead). A fixed mount has no price and must simply be noted at time of construction.

Gun Shields: Both pintle and ring mounts can be equipped with gun shields, which provide the gunner with Light Vehicle Armor (based on the Chassis armor type) in the direction the weapon is facing.

The Weapon Mounts table describes the various weapon mounts and modifications available in the Design System. Each column is described as follows:

TL: The minimum tech level required to manufacture such an item.

Price: Price of this weapon mount in Credits (Cr).

Weapon Type: The category of weapon, from the weapons chapter that this mount can carry.

Stabilized: Indicates if the mount is stabilized and so does not suffer a penalty to fire while moving.

Weapon Mounts

Mount Type	TL	Price (Cr)	Weapon Type	Stabilized?
Fixed	4	0	--	--
Pintle	4	500	Common Heavy Weapon	N
Ring	4	750	Common Heavy Weapon	N
Pintle, Powered	7	1,500	Common Heavy Weapon	Y
Ring, Powered	7	2,150	Common Heavy Weapon	Y
Gun Shield		1,200 for Light armor, 3,000 for Heavy		

Vehicle Turrets

Vehicle turrets come in two varieties: small and large. A vehicle turret takes up one weapon point per 60 Compartments in size, or fraction thereof, of the turret itself. A small turret is only big enough to fit the weapon installed, and is remotely controlled from within the vehicle. They can hold [Gunnery Weapons](#) while a large turret holds both the installed weapon and its operator and the [Gunnery Weapons](#). Vehicle turrets can also represent gun pods and other housing for larger weapons on vehicles.

Coaxial (or Paraxial) Mounts: Multiple weapons can be mounted in the same turret. All weapons mounted in the same turret have the same firing arc. Such turrets consume an additional weapon point per additional weapon beyond the first. This is in addition to the standard allocation of one weapon point per 60 Compartments in size, or fraction thereof, of the turret itself.

Pop-Up is a quality that can be applied to any type of turret – the turret is concealed in a pod or recess on the hull, and is detectable only when deployed. A ship with all its weapons in pop-up turrets looks unarmed to a casual sensor scan.

Turret Type	Compartments	Weapon Type	Price (Cr)
Small	12	Gunnery Weapons	Cr8,000 per Compartment
Large	24	Gunnery Weapons	Cr16,000 per Compartment
Pop-Up	Base x2	Gunnery Weapons	As base, plus additional Cr4,000 per Compartment

Vehicle Crew & Passengers

All vehicles require a crew to operate and maintain the vehicle. For civilian vehicles, that is typically one operator or driver. Military vehicles also require one gunner per weapon and one commander if three or more crew members are required. Every vehicle requires at least a basic cockpit or a basic control cabin to interface with the vehicle's control, communication and sensor systems.

Table: Vehicle Accommodations

Accommodation	Duration	Compartments	Price (Cr)	Notes
Cockpit, Basic	Short	2	Cr1,000	Supports one crew
Cockpit, Extended	Short	4	Cr2,000	Supports two crew
Seat, Cramped	Short	4	Cr2,000	Supports three people cramped
Seat, Standard	Short	2	Cr1,000	Supports one person
Seat, Pedestal	Short	.05	Cr100	Supports one Crew/rider

Life Support

Some vehicles provide differing levels of life support. Basic life support is free for submersibles and vehicles with Hostile Environmental Protection.

Life Support

Life Support Type	TL	Compartments	Price/Compartment (Cr)	Notes
Basic	5	3 per 20 people	3,500	Good for 10 days
Extended	7	3 per 5 people	17,500	Good for 90 days
Ultimate	9	3 per 5 people	20,000	As long as powered



Space Combat

The space-lanes can be dangerous. Pirates lurk near gas giants and jump points. Vessels belonging to enemy interstellar polities might raid a system and prey on the player characters' ship. The player characters might decide to engage in some piracy themselves, or they may be the crew of a patrol frigate that has found some pirates or raiders. Use the following rules to run the combat action on such occasions.

Space Combat Basics

Ships typically fight at a range of several thousand, or tens of thousands, kilometers. However, **Spaceships & Star Systems** abstracts ranges in ship combat. There is no need to track ranges, though creative Referees and players might describe their maneuverings and tactics in terms of range.

Space combat typically occurs in 6-minute **rounds**. This time accounts for weapon recharge cycles and long-range missile travel, as well as emergency repairs. Since range is abstracted using the Position mechanic (below), it is possible to run space combats at different time frames. This allows for furious dogfights between fighters, intense chases as smugglers attempt to run blockades, as well as nail-bitingly slow cat-and-mouse actions between pirates and patrol frigates, all using the same basic rules.

However long a round is in space combat, in each round every crew member may take one **action**, as detailed below. This means that crew members staffing two posts – such as a pilot also serving as a captain – must choose only *one* post they are filling in each round. This is the main reason most larger ships, and all military vessels, have dedicated captain and specialized personnel for each crew position. A character may occupy two positions at once, but in each given round, they may only act in one position. For example, smaller civilian starships often have the pilot double as the captain. In such cases, the character must choose every round if they take a piloting action or a captain's command action.

Position

There is no initiative or range to track in space combat. Each space combat round, all participating ships' pilots throw $1D + \text{Piloting skill} + \text{INT DM} + \text{their ship's current maneuver drive thrust number}$. The attribute DM used in space combat is usually INT, but in some circumstances the Referee might call for DEX or EDU DMs to be used instead.

The result of the $1D + \text{Attribute DM} + \text{Pilot Skill} + \text{Maneuver Drive Thrust number}$ is called the Position.

The ships in a space battle can only attack those targets in equal or lower Position to themselves, without restrictions. A ship with better Position may choose when to take its turn – before or after its opponents. All characters on a ship act on its turn. They can attack with any weapon on board their vessel, using the following modifiers based on the relative Position between attacker and target.

Ships with lower Positions suffers DM-3 to attack anyone with a higher Position number than them, in a given round. This penalty applies to turrets and bays. Weapons in fixed mounts or Main Guns **cannot attack without Position**. However, a successful Attack Vector Pilot action will allow for ships with fixed mounts or Main Guns to attack, albeit at DM-3. Note that two vessels that have the same result for their Position throw can still attack each other with all weapons, albeit at DM-2 to their attack throws.

Position Attack DM Table

Attacker is	DM to Attack Throws
Inferior Position with Main Guns or Fixed Mounts	No attack possible
Inferior Position with Turrets	DM-3
Inferior Position with Main Guns or Fixed Mounts <i>and</i> successful Attack Vector action	DM-3
In the same Position as the target	DM-2
1 or 2 Positions higher than the target	DM-1
3 or 4 Positions higher than the target	DM 0
5 or more Positions higher than the target	DM+1

Vessels with disabled Maneuver drives automatically lose Position. Note that space stations with a thrust of 0 roll Position normally. They simply do not have a bonus from maneuver drives. Instead of Piloting, station commanders throw 1D + Tactics + INT DM for Position. It is difficult, but not impossible, to stay in the blind spot of a station-mounted turret.

It is possible to have multiple ships engaged in combat. Simply record the different Position results in descending order. The ships higher on the "Position ladder" have better Position on any ship below them.

Actions

Each character may act once in each combat round. There are five positions aboard a ship: Captain, Pilot, Sensor Operator, Gunner, and Engineer, each with its own actions. There may be only one character performing an action at a given station, with the exception of Gunners: there is one gunner per turret, bay, or main weapon on a ship. Other characters can assist one of the positions in performing their actions below, according to the rule for collaborating on skill throws found in the Basic Rules chapter.

Captain Actions

The ship's captain may engage in one of the following actions:

Lead Crew: throw Leadership/INT 8+. If successful, gain a pool of positive DM points equal to the Effect (minimum 1) that the captain may distribute as they see fit for the next round. For example, a roll of 12 generates a pool of 4 points, which can be given to one crew member for a DM+4, or to four separate crew members, for a DM+1 each.

Outmaneuver: the captain throws Tactics/INT 10+. If successful, apply a DM+2 to the ship's next round's Position throw.

Pilot Actions

The pilot may take one of the following actions, in addition to the free Position throw they make at the start of each round.

Attack Vector: the pilot may throw Piloting/INT 8+ and apply the Effect to a single weapon's attack throws for the round. This throw is not modified by the ship's thrust rating. If the Effect of the throw is 1 or greater, the pilot may distribute the Effect "points" as positive DMs to various weapons. Alternatively, if the ship does not have Position, this action allows firing fixed weapons or Main Guns at the enemy, albeit at DM-3 to hit. In this case, no positive DMs can be distributed to fixed guns.

Dock: Docking is only possible with a friendly ship, or with an enemy ship without a functional maneuver drive. You may not dock with an actively maneuvering enemy ship.

Disengage: To disengage from ship combat, a ship can use their Pilot action that round to throw a Piloting/INT opposed skill throw vs. the pursuer's Pilot/INT, adding each ship's thrust rating to their respective throws. Whoever has Position gains Advantage on the roll for that round. The quarry escapes immediately if it wins the opposed throw. In a situation where a ship is attempting to escape multiple targets, use the Pilot skill and thrust rating from the fastest ship of the pursuing side against the lowest thrust rating of the target. Alternatively, a jump-capable ship may jump out of combat, as described below.

Evasive Maneuvers: the pilot throws Piloting/INT 12+, modified by the ship's available maneuver drive thrust rating. On a success, apply a negative DM equal to the Pilot's skill (to a maximum of DM-3) to all incoming attacks. This does not require Position, and lasts until the start of the ship's next turn.

Plot Jump: Plotting a jump requires the pilot's attention for 6 – (Pilot Skill) space combat rounds. As well, the pilot must succeed at a Piloting/EDU 6+ throw, with a negative DM equal to the distance in parsecs. It is also possible to plot a jump in one round, but this raises the difficulty to Piloting/EDU 10+. A failed throw means that the jump must be plotted again.

Emergency Jump: throw Piloting/INT 6+ to initiate an emergency jump while under fire; if successful, the ship's engineer must throw Engineering/INT 8+ to power the jump. Failures may be re-rolled in the next round. See the Ship Operations chapter above for the jump procedure itself. Note this applies DM-2 to the Jump Throw, increasing the chance of misjump. This requires a jump plot, as noted above – either prepared beforehand or generated during combat.

Sensor Operator Actions

The ship's sensor operator may act as follows:

Spoof Missiles: Electronic warfare can defeat incoming missiles; throw Computer/INT 8+ to spoof an incoming missile due to impact that round, or the next round. The sensor operator must roll to successfully spoof each missile. Multiple missiles may be spoofed each round up to the Sensor Operators Computer skill (minimum of 1 attempt).

Jam Sensors: Electronic warfare can provide "cover" to a ship. Roll Opposed Computer/EDU against one enemy vessel, modified by the ships' Computer DMs. If successful, the target of the Jamming suffers a negative DM to any attack roll made against the jamming ship. The negative DM is equal to the skill level of the Sensor Operator. This action is cumulative with a pilot's Evasive Maneuver action.

Scan: throw Computer/EDU 8+ to detect vessels and other objects; this throw is modified by the ship's sensor DM and by the target's stealth, if any.

Target Systems: throw Computer/EDU 10+, modified by the ship's Electronics DM. If successful, a single gunner may choose to target a specific system on the enemy ship with one attack. If that gunner's next attack is successful and does damage, they may select which system the attack has hit.

Sensor Lock: throw Computer/INT 8+, modified by the ship's Electronics DM. As well, apply a negative DM equal to the target ship's Electronics DM (DM+0 and lower do not count). If successful, all attacks against the locked ship gain a DM+1. The sensor lock lasts until the ship attempts to lock onto another target, or it is broken by the target.

Break Sensor Lock: throw Computer/INT 10+, modified by the ship's Electronics DM. As well, apply a negative DM equal to the attacker's ship Electronics DM (DM+0 and lower do not count). If successful, the existing Sensor Lock is broken.

Gunner Actions

Each gunner may take one of the following actions. Note that a gunner in a turret may fire all the weapons in that turret using different actions, once per round. For example, a gunner in a turret with a Beam blaster, a Pulse blaster, and a Missile Rack may fire the Beam blaster, launch a missile, and engage in point defense with the Pulse blaster.

Fire Energy Weapons: throw Gunnery/DEX 8+ to hit a target with an energy weapon such as a blaster, particle beam, meson gun, or fusion gun in their turret. For bays and main guns, the Chief Gunner of each such weapon makes a Gunnery/INT 8+ throw to hit the target.

Launch Missiles: the gunner launches one missile per rack in the turret. A missile cluster fires a salvo of five missiles, while a missile bank fires a salvo of 12 missiles. Throw Gunnery/INT 8+ before launch to lock the missiles on their target. Failure to lock prevents launching but keeps the missiles ready for launch in the future. If a Sensor Lock exists on the target (see Sensor Operator actions, above), no missile lock throw is required.

Missiles ignore Position modifiers to hit but are vulnerable to point-defense fire and electronic warfare spoofing. Missiles will hit their target at the end of the *next* round after their launch, allowing the targeting ship to attack missiles with point-defense and spoofing, if desired. On the round that the missiles reach their target, throw 4+ to hit the target, unmodified by any skill. The Evasive Maneuvers Pilot action affects this missile attack throw. Smart missiles that miss the first round may retry this throw once in the following round, after which they are no longer viable.

Point Defense: any energy weapon can perform point defense fire against incoming missiles, though pulse blasters are the most effective for this task. Throw Gunnery/DEX 10+ to destroy an incoming missile, with DM+2 if using a pulse blaster. The gunner may make multiple point defense attacks with the same turret weapon in the same action, but each attack after the first suffers from a cumulative DM-1, so the third shot, for example, will suffer DM-2 to hit the missile. Using this basic rule, throw against each incoming missile, but note that unlike regular attacks, here the gunner may try to gun down multiple missiles per combat round, with the penalty noted above. If a turret has multiple energy weapons in a turret being used for Point Defense, each weapon is rolled for separately – negative DMs for multiple attacks do not transfer between weapons. However, all weapons in a given turret must be used for point defense against missiles coming from the same enemy ship.

Launch Sand: the gunner may launch sand canisters to serve as a defensive screen. Throw Gunner/DEX 6+ to apply a DM-1 to all weapons and sensor locks from a single ship for one round. Multiple canisters stack their DM to a maximum of DM-3. Canisters last for one round, until the ship's next turn.

Note: each *weapon* in a double or triple turret has its own attack throw. However, energy weapons mounted in the same turret may only attack the same target. The gunner may launch missiles at any desired target. Also note that weapons mounted on a fixed mount cannot be used to attack unless the vessel has Position. Each weapon within a given turret can only shoot once per combat round, except when used for point defense. A gunner may fire all or some of the weapons in the same turret at the same round. In a triple turret, a gunner can fire all three weapons every turn.

Finally, note that, for the sake of simplicity, a missile rack, or torpedo launcher or torpedo bay must fire all its missiles against a single target each round.

Streamlined Turret Fire

To reduce the amount of die rolls in ship combat, for ships with more than 3 turrets, each double or triple turret should carry the same type of weapons. This allows all weapons to share the same attack throw but attacking at DM+1 for a double turret or at DM+2 for a triple turret. Damage is for one weapon only—we abstract the other weapons' contributions as increasing the chances of scoring a hit. Under this optional rule, all weapons in such a turret must attack the same target. If launching missiles, all missiles in the same turret share a single locking throw but hit their target individually. We recommend that when using the streamlined turret fire rules, you should also use the streamlined point defense rules (see below) for the sake of simplicity.

Streamlined Point Defense for ships up to 999 tons

In large battles involving large numbers of missiles and blasters, attacking each missile individually by point defense fire is quite impractical. To simplify such combat, use the following rule. At the beginning of each round, the defender decides how many, if any, energy weapons are dedicated to point defense. This applies a negative DM to all incoming missiles' hit throws, per the following table. Sand Canisters also apply a DM-1 similar to blaster point defense.

Streamlined Point Defense – for ships up to 999 tons

Weapons	DM to incoming missiles
1	-1
2-4	-2
5-7	-3
8-9	-4

Streamlined Point Defense for ships of 1000+ tons

To resolve streamlined point defense for ships of 1000-10000 tons, use the following table of blaster turrets and sand canisters vs. missiles. The attacker makes a single attack throw, Gunnery/INT 8+, without modifiers; if successful, at least some of the missiles hit their target. Then consult the following table to find how many hits were caused by the missiles that penetrated the target's defensive blaster fire. Results marked with a dash ("-") means that no hits are possible even with a successful attack throw. The left-most vertical column is the number of blaster turrets; the top horizontal row is the number of inbound missiles.

The table assumed unarmored, 1000+ tons, starships, which are always rated at Light Armor. For ships rated at Heavy Armor (i.e., Lightly Armored large ships), consider the number of blasters being two steps better; nuclear weapons ignore this. Non-nuclear missiles are ineffective vs. Heavy Armor and nuclear missiles suffer from the number of blasters being two steps better. Both conventional and nuclear missiles are ineffective against Massive Armor.

Missile vs Blaster Turret Hits							
# Blaster Turrets/Sand # of Missiles	10-20	21-30	31-40	41-50	51-60	61-80	81+
10-20	1D	2D	3D	1 Crit	1D Critical	Destroyed	Destroyed
21-30	1D	2D	2D	3D	1 Crit	Destroyed	Destroyed
31-40	1	1D	1D	2D	3D	1 Crit	1D Critical
41-50		1	1	1D	2D	3D	1 Crit
51-60			1	1	1D	2D	3D
61-80				1	1	1D	2D
81+					1	1	1D

Engineer Actions

Any character with the Engineering skill can perform **Damage Control** – emergency repairs of damaged systems and breaches. Multiple characters with this skill may perform damage control at the same time, each on a different system. Throw Engineering/INT 8+ to repair a damaged system or to jury-rig a single disabled system back into operation. Success temporarily repairs one hit on the system. The damage will reappear in 1D hours. Note: destroyed systems cannot be repaired or jury-rigged during combat.

Characters without the Engineering skill but with the Repair skill may assist an engineer in damage control, using the Aid Other rules in the Basic Game Mechanics chapter.

Repair drones can make one damage control check per combat round.

Overcharge Weapon: the engineer can disable the safeties on an energy weapon for extra damage. Throw Engineering/EDU 8+ to boost a single energy turret's Hits rating by +1, including all energy weapons mounted on said turret.

Redline Engines: the ship's chief engineer throws Engineering/EDU 8+. On a success, the ship's thrust rating increases by 1 for next round (including the Position throw).

Starship Damage

When an attack hits a target, refer to the Ship Penetration Matrix Table below, then roll on the appropriate component damage table. Each weapon indicates (in its "hit" statistic) how many rolls to make on that table. Roll radiation damage separately on the Radiation Table. If a Gunner scores a particularly stunning hit with Effect 6+, shift one column to the left when reading damage. That is, if a gunner fired a beam blaster and hit a target with Light Armor, it would normally do Surface damage. However, if that gunner rolled an Effect 6+, treat the target as Unarmored; the attack would do Internal damage.

Ship Penetration Matrix Table

Weapon/Armor	Unarmored	Light	Heavy	Massive
Light	Internal	Surface	Undamaged	Undamaged
Intermediate	Critical	Internal	Surface	Undamaged
Heavy	Destroyed	Critical	Internal	Surface
Main Gun	Destroyed	Destroyed	Critical	Internal

Surface Hits Table

2D	Surface Components
2-6	No damage – attack bounces off
7-8	Breach
9-10	Weapon
11	Electronics
12	Internal Hit

Internal Hits Table

2D	Starship Components	Small Craft Components
2	Breach	Sensors
3	Power Plant	Power Plant
4	J-Drive	Hold
5	Weapons	M-Drive

6	M-Drive	Crew
7	Breach	M-Drive
8	Hold	Armor
9	Crew	Weapons
10	Sensors	Breach
11	Bridge	Cockpit
12	Critical	Critical

Radiation Hits Table

2D	Radiation Damage
2-5	No damage – radiation absorbed by hull
6-7	Sensors
8-9	Electronics
10-11	Crew
12	Critical

Note that the ship's armor modifies Radiation Hits, unlike other types of hits. Apply DM-1 for Light Armor, DM-2 for Heavy Armor, DM-4 for Massive Armor, and DM+1 per additional radiation hit in the same round.

Critical Hits Table

1D	Starship Critical Hit	Small Craft Critical Hit
1	Power Plant Destroyed	M-Drive Destroyed
2	M-Drive Destroyed	M-Drive Destroyed
3	Jump Drive Destroyed	Power Plant Destroyed
4	Critical Crew Hit	Critical Crew Hit
5	Electronics Destroyed	Electronics Destroyed
6	Ship Destroyed	Ship Destroyed

N.B. If the small craft has a Jump drive, substitute J-Drive for the first listing of M-Drive in the Internal and Critical Hits tables. A roll of 5 and 1 respectively.

Surface and Internal Hit Descriptions

The following is a description of ship system internal hits. Note that if a system is destroyed, any more damage on the same system has no further effect.

Breach

The ship suffers a hull breach and is exposed to vacuum. Anyone not wearing a space Suit or in a sealed compartment suffers exposure to vacuum per the Adventuring chapter. Staterooms are considered sealed for the purposes of this damage. On large ships of above 1000 tons, each Breach depressurizes 1000 tons of the ship.

Bridge

The bridge is hit.

First Hit: the crew suffers a Crew Hit (see below). DM-2 on all future Position rolls.

Second Hit: bridge disabled; Captain, Pilot, and Sensor Operator actions are impossible until the bridge is repaired, and Gunnery throws suffer DM-2. The crew suffers a Crew Hit (see below).

Third Hit: bridge irreparably destroyed; each bridge crew member suffers 4D damage, reduced by personal armor.

Cockpit

The small craft's cockpit is hit.

First Hit: the crew suffers a Crew Hit (see below). DM-2 on all future Position rolls.

Second Hit: cockpit disabled; all actions are impossible; The crew suffers a Crew Hit (see below).

Third Hit: cockpit irreparably destroyed, and each bridge crew member suffers 4D damage.

Crew

1D crew members and passengers suffer 2D damage each. If there are fewer people than the number rolled, one or more of them, randomly determined, will receive multiple hits. Personal armor reduces this damage.

Critical Crew Hit

All crew and passengers suffer 4D damage each. This damage can be reduced by personal armor.

Electronics

The electronic systems are hit.

First Hit: The electronics are scrambled. Until the system is repaired, the ship suffers a DM-2 to all Computer, Piloting, and Gunnery rolls.

Second Hit: The electronics are disabled. The ship cannot make any Piloting or Computer rolls and cannot maneuver; it loses any benefits from software until the electronics repaired. Manual gunnery is still possible at a DM-4.

Third Hit: The ship's electronic systems are completely burned out.

Subsequent Hits: No effect.

Jump catalyst

The jump catalyst tank is hit.

First Hit: 1Dx5% of catalyst tank capacity is destroyed.

Second Hit: 1Dx10% of the catalyst tank capacity is destroyed. This catalyst loss is in addition to the losses of the first hit.

Third Hit: Catalyst tanks destroyed; all jump catalyst is lost

Hold

The cargo hold is hit.

First Hit: 1Dx5% of the cargo is destroyed.

Second Hit: 1Dx10% of cargo is destroyed. This cargo loss is in addition to the losses of the first hit.

Third Hit: the cargo hold, and all its contents are destroyed.

J-Drive

The ship's jump drive is hit.

First Hit: DM-2 to any attempt to jump.

Second Hit: jump drive disabled.

Third Hit: jump drive irreparably destroyed.

M-Drive

The maneuver drive is hit.

First Hit: halve the ship's remaining thrust (round down).

Second Hit: maneuver drive disabled. The ship is adrift and has a Position of 0.

Third Hit: maneuver drive irreparably destroyed.

Power Plant

The power plant is hit.

First Hit: halve the ship's thrust and jump rating (round down).

Second Hit: power plant disabled. The ship is functioning on emergency power. Energy weapons fire is impossible. The ship can maneuver, but will always lose Position.

Third Hit: power plant irreparably destroyed. Emergency power remains for 1D hours; afterwards, life support systems will fail. Cryotubes are unaffected by this as they have an integral, long-term power supply.

Sensors

The ship's antennae and other sensor equipment are hit.

First Hit: ship sensor DM reduced by -1 (cumulative with electronics damage) Ship can no longer obtain Sensor Locks

Second Hit: ship sensor DM reduced by -2. Ship cannot make or break Sensor Locks and gunners suffer DM-2 to missile lock attempts.

Third Hit: Sensors disabled. Gunnery missile lock attempts suffer DM-6.

Weapons

Each hit disables one weapon in a given location:

2D	Location
2-9	Turret hit
10-11	Bay hit
12	Main gun hit
If there are no bays or main guns, disable turret weapons instead. Multiple hits on the same weapon (not just turret) destroy the weapon. Additional hits on a destroyed weapon are transferred to other randomly determined weapon systems	

Repairing Damage

Jury-rigged systems repaired using the **Damage Control** action will fail within 1D hours. After that, the system requires full repairs. Throw Engineering/EDU 8+ to fully repair a damaged system; this takes 1D hours and requires 0.02 tons of spare parts per ton of repaired system. A successful throw returns the system to operational status. A failed throw may be repeated but will require additional spare parts.

Spare parts cost Cr100,000 per ton, and may be stored in the ship's cargo bay.

Multiple engineers may work on repairs simultaneously, provided that each works on a different system. Alternately, multiple engineers may work on the same repair using the Aid Another rules.

Replacing a destroyed system requires a shipyard and costs 2Dx10% of the system's original cost.

Starship Encounters

Space is indeed vast, however most travel between stars will happen in well-defined regions of star systems: jump points, near gas giants, and near stations and smuggler caches. Thus, there are opportunities for random encounters. We present a simple set of rules to help GMs generate and develop space travel encounters for itinerant merchants, smugglers, pirates, and their ilk. These encounters can be used to spice up an adventure with something unexpected or can serve as the structure of the entire adventure, depending on the GM's preference.

System Types

Each system has a traffic and safety level that determines how likely and how dangerous an encounter might be. Below are eight system types. We encourage GMs to come up with their own system types for their campaigns.

Middle of Nowhere: Nothing ever happens here, and why would it? This system is too far off the space lanes, or too poor, to attract much attention.

Bandit Territory: this backwater is home to pirate raiders and other criminals. Unfortunately, the system is not important enough to send a patrol ship to deal with the problem.

Going Concern: These prosperous systems are happy to engage in legal trade. There are regular fleet patrols, and healthy levels of traffic.

Rail Head System: This system is either a free port, or on the frontier. Either way, there is a lot of economic opportunity here: trade is plentiful, as is crime.

Wild West System: There is little law and order in these busy systems, but enough valuable trade happens to make travelling here worthwhile, for the very enterprising, foolhardy, or desperate.

Capital: These systems are perfect examples of peace, security, and prosperity. Capital systems are usually the busiest in the sector and their space lanes are heavily patrolled. There is a lot of money to be made here, but most free-spirited traders will resent the high taxation that is the price for peace and prosperity.

Bazaar: Traders' paradises, Bazaar worlds have everything to offer ambitious entrepreneurs. Nearly anything is available to be bought or sold in a Bazaar. There is just enough law and order here that pirates, and other criminals can't operate openly.

Hive of Scum and Villainy: A free-for-all of corruption, iniquity, crime, and opportunity. Laws in these systems, when they are enforced, exist to maintain a thin veneer of civilization for the purposes of encouraging trade.

Encounter Generation Procedure:

1. Determine if there is an Encounter by rolling on the appropriate System column of the Encounter Table.
2. Determine the Encounter Range.
3. Determine NPC Reaction Result

Ship Encounter Table

A (P) in the entry notes that this ship is willing and able to turn pirate should the PC vessel be an opportune target. The NPC Reaction Roll (below) should give the GM more guidance as to how to play an opportunistic pirate.

2D	Middle of Nowhere	Bandit Territory	Going Concern	Railhead	Wild West	Capital	Bazaar	Hive of Scum & Villainy
2	-	-	-	-	-	-	-	-
3	-	-	-	-	-	Research	Courier	Salvage
4	-	-	-	-	-	Yacht	Yacht	Salvage (P)
5	-	-	-	Courier	Trader (P)	Trader	Salvage (P)	Trader
6	-	-	Trader	Trader	Trader	Trader	Trader (P)	Trader (P)
7	-	Salvage (P)	Liner	Liner	Liner	Liner	Trader	Trader (P)
8	Trader (P)	Trader (P)	Yacht	Trader (P)	Salvage (P)	Salvage	Liner	Liner
9	Salvage	Courier (P)	Courier	Courier(P)	Research	Patrol	Patrol	Pirate
10	Patrol	Pirate	Patrol	Patrol	Courier	Warship	Pirate	Research
11	Scout (P)	Courier	Salvage	Salvage	Pirate	Yacht	Research	Yacht (P)
12	Trader	Patrol	Patrol	Research	Patrol	Courier	Courier	Courier

Ship Descriptions:

Encounters need not be limited to the ship types described below. GMs should feel free to develop their own encounter tables for their most often visited systems and substitute the appropriate ship types accordingly.

Ship Encountered	Description
Courier	Small ubiquitous ships transporting information or something more tangible.
Salvage/Miner	Common system ships that locate raw or recyclable materials and extract them. Grimy and unglamorous.
Research	Advanced ships with high tech toys, staffed with bored crew and science nerds.
Yacht	A plaything for the very wealthy. Usually unarmed and filled with luxuries. Some are very advanced.
Liner	Large ships designed to haul large numbers of passengers. Some are little more than glorified long-haul buses, while others are spectacularly opulent cruise ships.
Trader	A class of ships encompassing free traders hopping from system to system, to large corporate freighters hauling bulk cargoes on the space lanes.
Patrol	Smaller military or police vessels that keep the peace and discourage piracy.
Warship	Dedicated combat vessels, including small battlegroups.
Pirate	This represents a full-blown pirate or privateering warship: a corsair or other heavy gunboat dedicated to piracy.

Encounter Frequency and Range

The GM should roll for encounters whenever the PCs enter a new system, or new region in a system. For example, when transiting from a mainworld to a system's gas giant, roll when the ship arrives at the gas giant.

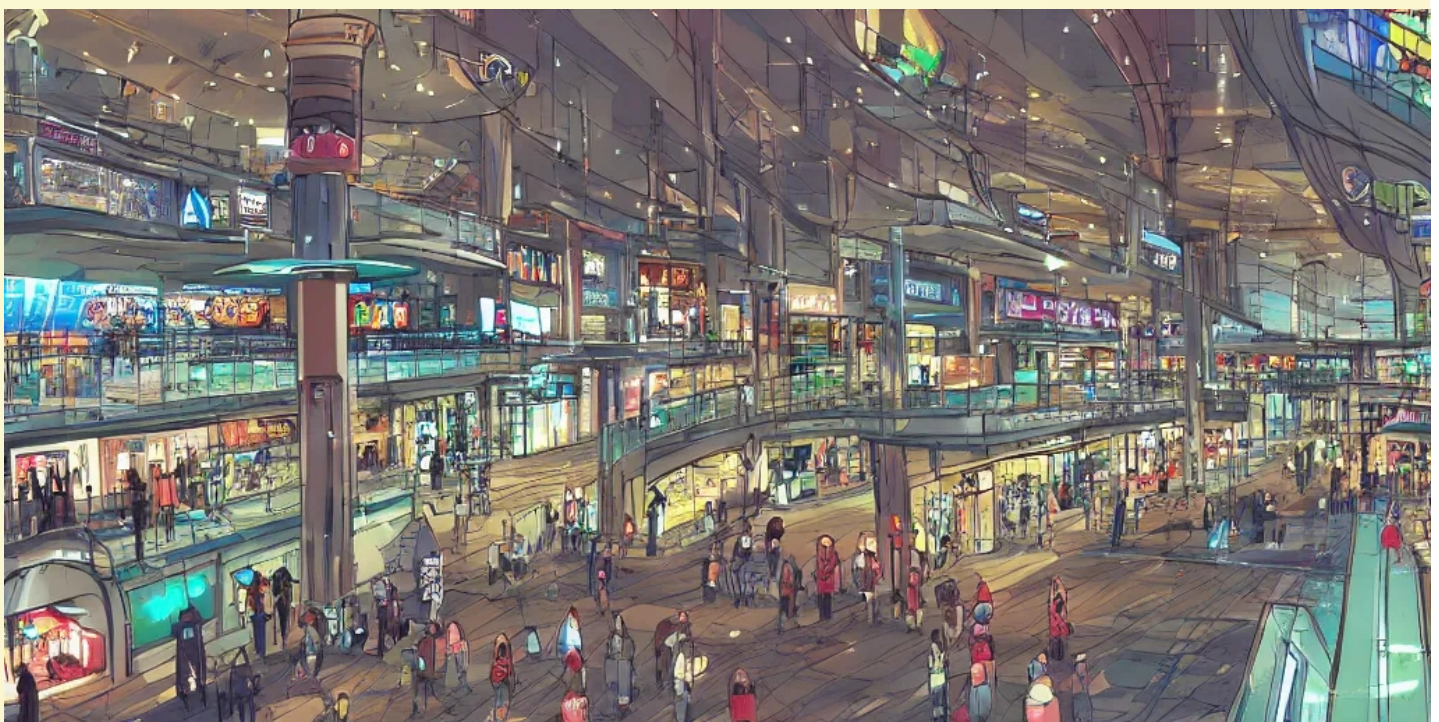
To determine the Encounter Range, the ship's sensor operator should make a Computer/EDU 8+ roll, modified by ship's sensor capabilities, the active or passive stealth capabilities of the encounter, the background radiation levels, and anything else the GM might want to include. Roll 1D and add the Effect of the roll. This is the number of hours at 1G thrust that it will take to intercept (or be intercepted by) the encounter, with a minimum of 6 minutes (one Space Combat Round).

Reaction Roll

The table below includes standard NPC Reactions on a 2d6 roll. As well, we have included some examples of likely attitudes and actions for each Reaction result to help as GM prompts. Remember to use common sense and interpret the NPC Reaction roll in the context of the specific encounter. The NPC Reaction roll should drive much of the initial interaction between the PCs and the encounter. GMs are encouraged to use the NPC Reaction Roll to differentiate between otherwise similar encounter results and keep the players guessing.

NPC Reaction Table (Roll 2D)

2D	Result	Attitude	Possible Actions
2	Hostile	The NPC will immediately attack (roll Morale), or actively spoil whatever plans the PCs have.	Attack, interfere, escape, flee. Whatever the PCs are doing, this NPC is against it. If the PCs are obviously more powerful, the NPC will leave.
3-5	Unfriendly	The NPC will do anything short of outright hostile action. They are unhelpful and untrustworthy.	Avoid, insult, lie, misdirect, mislead, waste time. The NPC is unwilling to resort to direct action.
6-8	Indifferent	The NPC is uninterested in helping or hindering the PCs.	Any socially acceptable neutral action. The NPC will act in a socially predictable or wary manner.
9-11	Friendly	The NPC is cooperative and friendly.	Chat, offer limited help, give information. The NPC will not act against the PCs.
12	Helpful	The NPC is interested in helping or cooperating with the PCs fully.	Aid, support. The NPC will join the PCs' cause with very little convincing.



World Generation

Countless worlds await the hardy adventurer or intrepid explorer. This chapter provides quick and simple rules for generating worlds and subsectors of space with several worlds in them.

Star Mapping

These rules greatly abstract astrology by using two-dimensional star maps to represent three-dimensional space. The standard map is a *subsector*, 8 hexagons wide and 10 hexagons long. Each of those hexagons represents a parsec (3.26 light years). 2 by 2 subsectors form a *quadrant* of 16×20 hexagons, and 4 by 4 subsectors (2 by 2 quadrants) are a *sector* of 32 by 40 hexagons.

When randomly generating a subsector, a world is normally present in each subsector hexagon on a throw of 4+ on 1D. If a world is present, it has a gas giant in its system on a throw of 5+ on 2D. Gas giants are important for exploration as they allow accessible frontier catalyst skimming. Asteroid belts. To determine if the system has any planetoid belts roll 2d6 and on 8+ there are one or more belts. Roll 2D6 and consult the following to determine number, 2-7 = 1, 8-11 = 2 and a 12 = 3 belts.

World Creation

The process of creating worlds in Spaceships & Star Systems involves making a series of 2D roll and applying modifiers based on the planetary characteristic being generated. It is important to retain the rolled value, after all modifiers, for use with other characteristics. For example, the Size roll is used as a modifier for both the Atmosphere and Hydrographics rolls for the world.

Details of the mainworld in a system are determined using the following procedure:

1. Roll World Size
2. Roll Atmosphere, use the Size rating as a modifier
3. Roll Hydrographics, use the Size rating as a modifier
4. Roll Population
5. Roll Government, use the Population rating as a modifier
6. Roll Law Level, use the Government rating as a modifier
7. Roll Starport, use the Population rating as a modifier
8. Roll Tech Level, use all the above characteristics as modifiers
9. Determine Trade Codes, use all the above characteristics as modifiers
10. Determine Bases, use the Starport rating as a modifier
11. Apply any Allegiances, trade lines etc. based on the setting
12. Develop the world using everything above and your imagination.

Using random rolls to develop a world can create some very unusual, or even impossible, characteristic combinations. Most commonly, the world size might not support the other physical characteristics, or the population doesn't match the habitability of the planet. The Referee should feel free to change any of these as needed, but we certainly encourage trying to figure out an interesting reason for the unusual conditions to exist.

Referees (and others) can use these world-building rules to create the main world, or most inhabited world, in each star system. These rules are not intended to create every planetary body in a given star system. If the Referee wishes to add further to detail a star system, they could select the characteristics that make sense to them.

This process is designed to produce an interesting mix of worlds as might be found in a frontier subsector. Referees should adjust these rolls, especially the social characteristics of Population, Government, Starport, and even Tech Level to fit the setting they are creating.

World Size

Throw 2D-2 and consult the following table to determine the world's Size rating.

Surface gravity is an approximation using Earth standard gravity (9.8m/s^2) as one "g".

World Size

Roll	Diameter	Surface gravity
0	Asteroid belt	Negligible
1	1600km	0.05g
2	3200km	0.15g
3	4800km	0.25g
4	6400km	0.35g
5	8000km	0.45g
6	9600km	0.7g
7	11200km	0.9g
8	12800km	1.0g
9	14400km	1.25g
10	16000km	1.4g

Atmosphere

Throw 2D-7 and add the world's Size rating to determine the world's Atmosphere rating. If a world's Size rating is 0, the Atmosphere rating is also 0. The Atmosphere rating cannot be lower than 0 or higher than 15.

Atmosphere

Roll	Atmosphere	Survival Gear Required
0 -	Vacuum	Space suit
1	Trace	Space suit
2	Very Thin - Tainted	Breather with air supply
3	Very Thin	Breather with air supply
4	Thin - Tainted	Breather
5	Thin	-
6	Standard	-
7	Standard - Tainted	Breather
8	Dense	-
9	Dense - Tainted	Breather
10	Exotic	Breather with air supply
11	Corrosive	Space suit
12	Insidious	Space suit, Hostile Environment
13	Dense - High	Space suit in low altitudes
14	Thin - Low	Breather with air supplies at high altitudes; no protective equipment necessary at low altitudes
15+	Unusual	Varies

Atmosphere Notes

Vacuum: there is no atmosphere. Organic beings require a space suit to survive.

Trace: there is extremely low atmospheric pressure. Operating on the surface requires a space suit.

Tainted: an otherwise breathable atmosphere, except that it contains some elements harmful to humans. Breathing this atmosphere without a breather-mask causes 1D damage every 10 minutes.

Very Thin: low air pressure; humans require a Breather to condense the atmosphere to a breathable pressure. A very thin - tainted atmosphere uses both the breather's condenser function and filtration function.

Thin: low-pressure breathable atmosphere. Requires no protection gear but will be unpleasant for humans who are unused to the thin air.

Standard: Terra-like atmospheric pressure and composition. Best environment for humans.

Dense: high-pressure breathable atmosphere. Requires no protection gear but will be unpleasant for humans unused to the atmosphere.

Exotic: unbreathable by humans but otherwise harmless to them. Humans require an air supply to survive in Exotic atmospheres.

Corrosive: this atmosphere causes 1D damage per round to unprotected characters. Will breach a space suit in 2D hours.

Insidious: as Corrosive, but powerful enough to breach a space suit within 1Dx10 minutes. A Hostile Environment Space Suit provides protection against Insidious atmospheres for 2D hours.

Dense - High: thick N2/O2 atmosphere with deadly pressure at ground level; atmosphere is breathable and habitable at high altitude, such as on tall mountains. At lower altitudes, the pressure causes 1D damage per round to unprotected characters.

Thin - Low: a thin atmosphere that is only breathable at low altitudes, where higher atmospheric pressure can support unprotected human life. At higher altitudes, treat as a Very Thin atmosphere.

Unusual: left to the Referee's discretion.

Hydrographics

Throw 2D-7 and add the world's size roll to determine the world's Hydrographic rating. The following DMs apply. A planet's Hydrographic rating cannot be below 0 or exceed 10. Multiply the rolled value by ten to determine the percentage of the world's surface that is covered by water. For example, a planet with a Hydrographics rating of 2 would have 20% of its surface covered by water.

Hydrographics DMs

Condition	DM
Size 0 or 1	Hydrographics must be 0
Atmosphere 0, 1, A, B, or C	DM-4
Atmosphere E	DM-2

Population

Throw 2D-2 to determine the world's Population rating. This represents the order of magnitude of the world's population. For example, Population 3 is thousands of inhabitants, Population 7 is tens of millions, and Population 9 is billions of inhabitants. The maximum Population is 10 (tens of billions of inhabitants) per world, except for extreme cases at the Referee's discretion. **Population multiplier:** Roll 1D10 to get a more exact population figure. Example, the planet has a Pop of 3. Roll 1D10 to determine how many thousands of inhabitants. 0 = 1,000 inhabitants, 2= 2,000, ... 9 = 9,000 inhabitants.

Apply the following DMs:

Population DMs

Condition	DM
Unbreathable Atmosphere	DM-2
Standard Atmosphere	DM+3
Standard, Tainted Atmosphere	DM+1
Thin or Dense Atmosphere	DM+1
Hydrographics 0 and Very Thin or lesser Atmosphere	DM-1

Government

Throw 2D-7 and add the world's population rating to determine its Government type, as described below. Worlds with a Population rating of 0 have no Government.

World Government

Roll	Government
0 -	None
1	Corporation
2	Constitutional Republic
3	Self-Perpetuating Oligarchy
4	Participatory Democracy
5	Technocracy
6	Captive Government
7	Representative Democracy
8	Civil Service Bureaucracy
9	Impersonal Bureaucracy

10	Charismatic Dictator
11	Non-Charismatic Dictator
12	Charismatic Oligarchy
13	Religious Dictatorship
14	Religious Autocracy
15 +	Totalitarian Oligarchy

None: no government. Small family or loose clan structure if there is any population at all.

Corporation: rule by a corporation or other commercial enterprise.

Constitutional Republic: Government power defined and restricted by a constitution that guarantees human rights.

Self-Perpetuating Oligarchy: a small, self-contained group of people are in control.

Participatory Democracy: direct democratic rule by the entire population.

Technocracy: rule by unelected experts and professionals.

Captive Government: the government on the world answers to an external authority.

Representative Democracy: rule by elected officials.

Civil Service Bureaucracy: government by agents selected for their relative competence.

Impersonal Bureaucracy: government by complex agencies insulated from the population.

Charismatic Dictatorship: governed by a single leader who enjoys popular support.

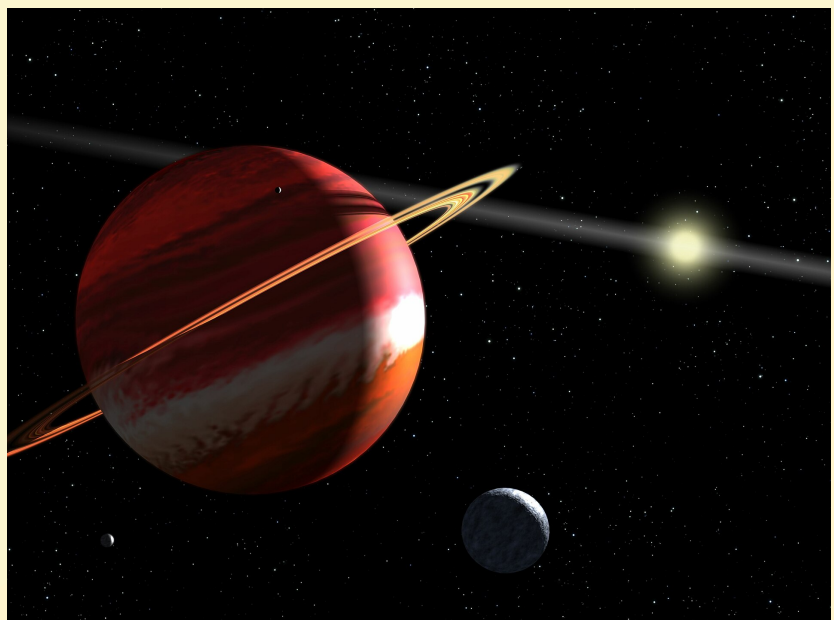
Non-Charismatic Dictatorship: governed by a single ruler who lacks popular support.

Charismatic Oligarchy: rule by a select group or organization enjoying popular support.

Religious Dictatorship: governed by a religious organization.

Religious Autocracy: rule by a single religious leader.

Totalitarian Oligarchy: governed by a clique controlling every facet of the population's lives.



Law Level

Throw 2D-7 plus the Government rating to determine the world's Law Level, as described below. This represents how strict the world's laws are and how stringently and widely they are enforced. If the world's Government rating is 0, then its Law Level is also 0. The Law Level should never be less than 0 or greater than 10. Note that worlds that lack a population also lack a Law Level.

Law Level

Roll	Commonly Forbidden Weapons
0-	Lawless. All weapons allowed. Candidate for Amber Zone status.
1	Poison gas, explosives, undetectable weapons, weapons of mass destruction
2	Portable energy weapons (unless mounted on ships)
3	Heavy Weapons
4	All automatic weapons
5	Personal concealed weapons
6	All firearms except for shotguns and stunners. Carrying weapons is discouraged.
7	Shotguns.
8	All bladed weapons, stunners.
9	Any weapons outside one's residence. Candidate for Amber Zone status.
10+	Highly restrictive government. All weapons forbidden. Candidate for Amber Zone status.

Starport

Most inhabited worlds have starports which greatly facilitate travel and interstellar commerce. Many worlds will have more than one starport, but only the best starport is usually listed. Throw 2D-7 plus the world's Population rating to determine the Starport Class, as detailed below. Worlds without a population will lack a starport unless the Referee chooses to place one as part of the setting.



Starport Table

Roll	Class	Description	Best Catalyst	Annual Maint.	Shipyard	Possible Bases
2-	X	No Starport	None	No	None	None
3-4	E	Frontier	None	No	None	None
5-6	D	Poor	Unrefined	No	None	Scout
7-8	C	Routine	Unrefined	No	Can perform reasonable repairs	Scout
9-10	B	Good	Refined	Yes	Can construct non-jump-capable craft	Fleet, Scout
11+	A	Excellent	Refined	Yes	Can construct starships	Fleet, Scout

Class A starports comprise the finest and most extensive interstellar infrastructure there is. These ports have the best of everything: vast construction yards capable of manufacturing and repairing all types of starships, docking facilities for nearly any size of vessel, and amenities for travelers, traders, and crew alike. Class A ports always have extensive orbital facilities. Fleet bases and occasionally Research and Scout bases may also be present.

Class B starports are good quality ports with construction facilities capable of manufacturing system ships. Additionally, these facilities can perform annual maintenance on starships. Class-B starports always have an orbital facility associated with them. They are well-equipped for handling interstellar trade and shipping. Fleet, Research, and Scout bases may be present.

Class C starports are the 'standard' starport. They have reasonably good ground facilities and may have an orbital port depending on the volume of trade present. Class-C ports can perform most repairs on starships, but they do not have significant construction capability. Scout or Research bases may be present.

Class D starports have minimal landing facilities, and no orbital facilities. There are usually a few buildings, but no significant structures supporting visiting ships. Scout bases may be present.

Class E starports are very primitive: they are little more than a designated clear area and a marker beacon. If the tech level supports it, there may be landing lights.

Class X starports are not starports. There are no facilities, and no designated landing spots. Any visitors to the world must determine their own safe landing area.

A note on orbital facilities: Class A, B, and sometimes C starports include both ground and orbital facilities, with regular shuttle service between them. This allows ships with Distributed hull configurations to use the starport. Class D and E starports lack orbital facilities. Class X starports are not actually facilities.

Tech Level

Throw 1D, modified by all applicable DMs, to determine the world's Tech Level, as discussed in the Equipment chapter. A world's Tech Level cannot be below 0. On a world that enjoys significant interstellar trade, the Tech Level denotes local manufacturing capacity, but higher TL gear should be available at double cost. On isolated worlds, the lack of interstellar trade means that nearly all technology present on the world will conform to the world's Tech Level. The DMs below can end up generating some high Tech Levels. It is strongly recommended that the Referee limit the maximum TL possible; usually TL 15.

Note that worlds with no Population also lack a Tech Level.

Tech Level DMs Table

Rating	Starport	Size	Atmosphere	Hydro.	Population	Gov.
0		+2	+1	+1		+1
1		+2	+1		+1	
2		+1	+1		+1	+2
3		+1	+1		+1	
4		+1			+1	
5					+1	
6						
7						+1
8						
9				+1	+1	
10	A: +6		+1	+2	+2	
11	B: +4		+1		+3	
12	C: +2		+1		+4	
13			+1			-2
14			+1			-2
15			+1			
	X: -4					

Humans and human-like aliens require a minimal technological level to live on certain worlds. If a world's Tech Level is below the minimum required for survival on that world, increase it to the minimum value.

Minimum Tech Levels Table

Conditions	Minimum TL
Hydrographics 0 or 10, and Population 8 or higher	5
Atmosphere 4, 7, or 9. (Thin-Tainted, Tainted, or Dense Tainted)	5
Atmosphere 3- (Very Thin or less), or 10, 11, 12, 15 (Exotic, Corrosive, Insidious, or Unusual)	7

Trade Codes

Use the following table to determine the world's Trade Codes from the world's characteristics. The Trade Codes are important for generating Purchase and Sale prices as used in the Speculative Trade chapter. If a planet fulfills *all* the characteristics listed in a row below, then it gains the Trade Code for that row. Apply all Trade Codes for which the world qualifies. For example, a planet with Atmosphere 5, Hydrosphere 7 and Population 4 would *not* gain the Agricultural Trade Code (it would need a population between 5 and 7) but would gain the Garden and Non-Industrial trade codes.

Trade Codes Table

Classification	Code	Size	Atmo.	Hydro.	Pop.	TL
Agricultural	Ag		4-9	4-8	5-7	
Asteroid	As	0	0	0		
Barren	Ba				0	
Desert	De		2+	0		
Non-Water Fluid Oceans	Fl		A+	1+		
Garden	Ga		5, 6, 8	4-9	4-8	
High Population	Hi				9+	
High Technology	Ht					C+
Ice-Capped	Ic		0-1	1+		
Industrial	In		0-2, 4, 7, 9		9+	
Low Population	Lo				1-3	
Low Technology	Lt					5-
Non-Agricultural	Na		0-3	0-3	6+	
Non-Industrial	Ni				4-6	
Poor	Po		2-5	0-3		
Rich	Ri		6, 8		6-8	
Water World	Wa			A		
Vacuum	Va		0			

Agricultural: a world with an environment fit for large-scale agricultural production. Agricultural worlds require Thin, Standard, or Dense Atmospheres, Tainted or not, Hydrographics of 40% to 80%, and populations between the hundreds of thousands and tens of millions.

Asteroid: an asteroid belt devoid of life but rich in minerals. Asteroids require Size of 0.

Barren: an uninhabited world with Population 0.

Desert: a world with a significant atmosphere but no surface water. Desert worlds have an Atmosphere of Very Thin or denser, including Tainted version, and Hydrographics of 0%.

Fluid Oceans: a world with seas of liquids other than water, such as methane or more complex hydrocarbons. Fluid Ocean worlds have an Atmosphere of Exotic or worse, and Hydrographics of 10% or higher.

Garden: a perfect world for Terran (or similar) life. This world is populated enough for agricultural production, but with a population small enough to avoid significant ecological disruption. Garden worlds have breathable Thin, Standard, or Dense Atmospheres, 40% to 90% Hydrographics, and Populations ranging from the tens of thousands to the hundreds of millions.

High Population: a world with a Population of billions (or more!) of residents.

High Technology: an advanced world capable of interstellar-era technology. A world with a Tech Level of 12 or higher.

Ice-Capped: a world where surface water exists as ice deposits, usually near the poles. Ice-Capped worlds have an Atmosphere of Trace or None and Hydrographics of 10% or more.

Industrial: a world dedicated to massive-scale industrial production, often at the expense of the environment. Industrial worlds have an Atmosphere of None, Trace, or Tainted and Populations of billions or more residents.

Low Population: an outpost or other sparsely-populated world. The world has a Population of a thousand or fewer people.

Low Technology: a primitive world with pre-industrial technology. These worlds have a Tech Level of 3 or less.

Non-agricultural: a world incapable of feeding its population by regular agriculture. Societies here may use synthetic food, hydroponics, and other techno-agricultural methods, but the people usually rely heavily on agricultural imports. Non-Agricultural worlds must have an Atmosphere of Very Thin or less, Hydrographics of 30% or less, and a Population of millions or more.

Non-industrial: a world lacking a significant industrial base. Non-Industrial worlds must have a Population between ten thousand and a million people.

Poor: a marginally-habitable world. Poor worlds have an Atmosphere between Very Thin and Thin, including Tainted versions, as well as having Hydrographics of 30% or less.

Rich: a comfortable world with a breathable atmosphere and no overcrowding. Rich worlds have an Atmosphere of Standard or Dense—never Tainted—and a population between one million and one hundred million people.

Water world: a world completely or almost completely covered by water. Water worlds have Hydrographics of 100%

Vacuum: a world with no atmosphere. Vacuum worlds are larger than 1600 km and have no Atmosphere.

Bases

Some systems have fleet or scout bases. Others are pirate havens. Bases can help establish the subsector's politics. For example, fleet bases tend to appear along borders or on important core worlds, while scout bases are established near borders or on an open frontier. While the method below generates random bases, we strongly suggest the Referee might also place their own bases according to their vision of the setting.

A **Fleet Base** is a military base or depot serving an interstellar fleet. Fleet craft can refuel and resupply at a fleet base. On an independent world, a Fleet Base indicates significant local fleet strength. Fleet bases exist on worlds with Class A or Class B starports on a throw of 8+.

A **Research Base** is a facility dedicated to expanding the boundaries of known science. Corporations or governments often establish research stations to study interesting phenomenon. Often these bases are placed on out-of-the-way worlds to avoid prying eyes, or to contain the damage if something goes wrong. Research bases are present in systems with Class A, B, or C starports on a 2D roll of 10+; DM-2 for Class A starports.

A **Scout Base** is an exploration and communications outpost operated by a scout service. A scout base on an independent world represents well-organized exploration capabilities and efforts. Scout bases exist on worlds with starport Class D or better on a throw of 7+; DM-1 for a Class C starport, DM-2 for Class B starport, and DM-3 for Class A starport. Player characters with detached-duty Scout Ships can obtain fuel and repairs for free at scout bases.

A **Pirate Base** harbors raiders, corsairs, and other criminals. This is usually a small independent bandit hideout, but sometimes governments tolerate the existence of such bases to encourage raids against enemy shipping. A pirate base exists in a system without a fleet base or a Class-A starport on a throw of 12+.

The following table lists shorthand codes for bases present in a star-system.

Base Codes

Bases	Code
Fleet Base	N
Pirate Base	P
Research Base	R
Scout Base	S



Travel Zones

Most worlds are nominally civilized, though dangers can still lurk even on the safest core world. However, some worlds are far more dangerous than most. Interstellar organizations such as the Fleet, the Scout Service, and the Explorers' Society issue travel warnings regarding these treacherous worlds. Such warnings take the form of travel zones.

A world marked as an **Amber Zone** is unsafe for off-worlders. It might have a hostile environment or a particularly dangerous government; it might be experiencing a period of instability and strife. It could be run by criminals or could be filled with dangerous xenofauna. The Referee should mark worlds as Amber Zones if they have dangerous atmospheres (Corrosive or worse); unstable governments 0, 6, or 10 or higher; or a law level of 0 or 9+. The Referee may also designate worlds as Amber Zones for other reasons.

A **Red Zone** world is deemed so dangerous it is forbidden for non-military vessels to visit. The fleet or Scouts interdicts such worlds to prevent unauthorized landings. Marking worlds as Red Zones is left entirely up to the Referee's discretion. The Referee should usually use this designation sparingly.

Allegiances

Depending on the setting, worlds may be independent, or may belong to a larger interstellar polity. Or it could be vacillating in its allegiances. Examples of interstellar states run the gamut from very loose confederations to mighty empires. The referee should mark the borders of such polities on the map, and note any sub-divisions (districts, provinces, duchies, etc.) within the borders.

Communication and Trade Routes

Interstellar governments always try to establish lines of regular communication between their member worlds. As well, commercial activity will create regular trade routes that connect viable trading worlds in a given subsector. Such connections should encompass only some of the worlds in the subsector. There should also be some unconnected, less frequently visited worlds for characters to explore. The Referee should indicate Communication and Trade routes on the subsector map.

Communication Lines should connect any two worlds with Class A Starports, as well as Class B Starports, with any fleet bases, using the shortest possible routes. These represent the main arteries of interstellar administration and fleet activity. Thus, they enjoy highly frequent military and civilian courier and passenger services. Distances should not exceed the Jump capability of the highest TL world in the communication network.

Trade Routes represent strong and profitable commercial ties. There are a few criteria that two worlds need to meet to establish a Trade Route between them:

1. the pair of worlds have at least one Trade Tag that appears in the same rows of the following table;
2. the two worlds are within 4 hexes of each other;
- and 3. it is possible to connect the two worlds by a series of Jump-1 or Jump-2 routes.

If the pair of worlds meets the above three criteria, then a trade route connects them. The Referee should mark any trade routes in the subsector on the map. The specific effects of a communication or trade route are left to the Referee. However, systems connected by to trade routes are usually high-traffic systems for the purposes of speculative trade.

Trade Routes

First End Point	Second End Point
High Tech or Industrial	Asteroid, Desert, Ice-Capped, Non-Industrial
High Population or Rich	Agricultural, Garden, Water World

World Presentation

Once a world's characteristics have been developed, the following format can be used. See Appendix A for an alternate way to present the world information called the Universal World Profile (UWP).

(World), located in hex (hex number) of the (name) subsector, has a diameter of (diameter) km and a surface gravity of (gravity) g. The atmosphere is (atmosphere type). The surface is covered with (hydrographics)% water/fluid (select one). The world has (population) citizens governed by a (government type). The government imposes a Law Level of (law level) restricting (law level restrictions) weapons. The average technology is (tech level). Trade is supported with a Class (starport class) starport and (bases) bases. The world has the following trade codes (trade codes). (add details, history, or other setting specific information).



https://www.freepik.com/premium-photo/alien-planet-scenery-extraterrestrial-landscape-science-fiction-fantasy-generative-ai_38528285.htm

Appendix A – The Universal World Profile (UWP)

Spaceships & Star Systems and most compatible OGL 2D6 Sci-Fi games use a shorthand method to easily record planetary data. This encoding uses pseudo-hexadecimal codes (as given below) for the numbers 10-16.

Pseudo-Hexadecimal Notations

Rating	Letter
10	A
11	B
12	C
13	D
14	E
15	F
16	G

A UWP is a string of hexadecimal numbers presenting basic information about a world in eight digits.

It lists the world's characteristics in the following order:

1. Starport type.
2. World size.
3. Atmosphere.
4. Hydrographics.
5. Population.
6. Government.
7. Law Level.

-dash-

8. Tech level.
9. Any Bases
10. Notes with Trade Classifications
11. Zone type if any. E.g. Red, Amber
12. PBG Pop multiplier, planetoid Belts, Gas giants
13. Political allegiance. GM assigned. E.g. a system that is part of the "Empire" might be, "Em"

World name	Location	UWP code	Bases	Notes	Zone	PBG	AI
Shimball	0104	X577310-5		Lo, Lt		310	Na

Sample Frontier Subsector Longway

PlanetName	Loc.	UPP Code	B	Notes	Z	PBG	AI
Shimball	0104	X577310-5		Lo Lt		310	Na
Trallion	0106	D744451-6	P	Ni		713	Na
Termazonis	0107	X673245-5		Lo Lt		221	Na
Tethomm	0108	C767662-4		Ag Ga Lt Ni Ri		124	Na
Ord Mandas	0110	X955461-0		Ga Lt Ni		313	Na
Kaelanesis	0203	X731200-7		Lo Po		132	Na
Korribanib	0204	D99A330-9	S	Lo Wa	A	411	Na
Shikastare	0205	C662772-5	S	Lt Ri		511	Na
Larado	0206	E8A4211-7		Fl Lo		121	Na
Candari	0208	E432677-7		Na Ni Po	A	131	Na
Wobandore	0209	X310358-7		Lo		802	Na
Avalorell	0301	X797000-0	P	Ba Lt		012	Na
MARINERIA	0302	E899985-5		Hi In Lt		411	Na
Dabaki	0304	C645535-5		Ag Lt Ni		111	Na
Mondorel	0305	X547622-5		Ag Lt Ni		621	Na
Ralliana	0306	E555220-7		Lo		113	Na
BALLTIIR	0309	C66599C-6	S	Hi	A	111	Na
Siristern	0402	X754341-0		Lo Lt		233	Na
Trantonica	0403	D556610-6		Ag Ga Ni		410	Na
Corinea	0404	D442765-5	S	Lt Po		211	Na
Joschunk	0405	X000344-7		As Lo Va		112	Na
Mimbaragge	0406	X784150-3		Lo Lt		821	Na
Vegetaybee	0410	E697752-5		Ag Lt		130	Na
Vandrilon	0501	X877533-5		Ag Lt Ni		100	Na
Kaelencton	0504	X420122-7		De Lo Po		611	Na
Larathor	0505	X642100-5		Lo Lt Po		422	Na
Toydarina	0506	B88678A-5		Ag Ga Lt Ri	A	311	Na
Savarru	0507	X5306A7-7		De Na Ni Po		111	Na
Melandosha	0604	X657310-0		Lo Lt		321	Na
Kharna Di	0605	X421000-0		Ba Lt Po		031	Na
Asteria	0606	E79A000-0		Ba Lt Wa		031	Na
Sacorrias	0610	X876354-5		Lo Lt		502	Na
Veliana	0704	E772420-5		Lt Ni		122	Na
Akrabakis	0708	E768333-2		Lo Lt		114	Na
FONDALORN	0709	A666A76-B		Hi Cp		221	Na
Melari	0801	XAA7000-0		Ba Fl Lt		012	Na
Mutlathe	0802	E544350-7		Lo		512	Na
Sharnathae	0809	X200000-0		Ba Lt Va		011	Na
Cant	0810	D666644-2		Ag Ga Lt Ni Ri		110	Na

Longway Subsector



Extended System Generation

The system generation rules above encompass only the main inhabited world, number of gas giants and planetary belts in a star system. It does not generate the star type or types, in the case binary or trinary star systems, nor other planetary bodies that may exist. Take our own star system for instance. We have a G type yellow star and 3 terrestrial planets that would not appear in a listing using the procedure given in this rule book. Our star system has 3 suitable planets in the habitable zone. Venus, Earth & Mars. Fast forward 2,000 years from today and all three might be inhabited (with their own stats as above) and Pluto might have some type of base on it. There are several extended system generation rule sets available from other D6 space RPG's over the decades. Or, the GM can just populate systems ad hoc as needed. There are a couple of points to consider. 1) Stars have different habitable zones and orbits available in them depending on star type. 2) A star's 100D limit has to be considered. In our star system Earth lies just outside our sun's 100D limit and Venus is well inside of it. Therefore, if one is leaving Venus in a starship in order to jump to Alpha Centauri, you have to first travel beyond the Sun's 100D limit before engaging the Jump Drive. In any case, have fun being creative. We know little to nothing about the natural laws of system formation. Get creative and have fun. Main world orbiting a gas giant? Certainly. (Remember that the 100D limit would be figured from the Gas Giant's diameter!)

NPC Presentation Format

Below is the default NPC stat bloc for Spaceships & Star Systems.

Character	STR	DEX	END	INT	EDU	SOC	Lifeblood	Stamina
Basic Description							2x(END+Athletics skill)	END
List Skills here								
List important equipment, weapons (with damages), and armor (with protection) here.								

Xenofauna Encounters

Many worlds bear life, and this creates ecosystems, food chains, and the creatures that populate them. Interstellar visitors entering such alien ecosystems encounter xenofauna – alien animals. The latter respond in a manner dictated by their instincts, from flight, to indifference, to trying to eat the hapless adventurer.

Alien beasts vary greatly; however, basic ecological functions show great similarity between worlds. There are four basic categories of animals, based on diet: herbivore, omnivore, carnivore, and scavenger. Each category has sub-categories depending on how the animal gets its food. The following animal generation system creates alien animals based on their ecological function, rather than their form. The animal's exact form is up to the referee.

We encourage the referee to be creative and modify animals they might already know about, as they see fit. For example, poison and venom are common in the natural world here on Terra and would most likely be common on other worlds; the referee may give an animal a venom based on the poison rules later in this chapter. More radical variations of known creatures are also possible and encouraged. For example, the referee may devise a predator hunting by spitting thorns at its prey at high speed. In this case, they may decide that the animal's attack will resemble a rifle. Do not let the tables restrict you – they are merely tools to provide a baseline.

Animal Generation Process

Follow these steps to generate xenofauna.

1. Choose the animal's habitat terrain and roll for its movement type.
2. Determine the animal's ecological niche and subtype.
3. Determine size, stamina, lifeblood, and damage.
4. Determine weapons, armor, and base speed.

Terrain and Ecosystem

Terrain and the local ecosystem affect the types of creatures inhabiting them. Use the following table to determine the animal's mode of locomotion. The result provides DMs for later tables based on terrain. Roll 1D and consult this table for the animal's method of movement: A for Amphibious, F for Flying, S for Swimming, and W for Walking. The numbers following the movement type are further DMs to the animal's size.

Terrain and Movement

Terrain and Ecosystem	Subtype DM	Size DM	1	2	3	4	5	6
Clear	+3	-	W	W	W	W	W+2	F-6
Plain or Prairie	+4	-	W	W	W	W+2	W+4	F-6
Desert	+3	-3	W	W	W	W	F-4	F-6
Hills	-	-	W	W	W	W+2	F-4	F-6
Mountain	-	-	W	W	W	F-2	F-4	F-6
Forest	-4	-4	W	W	W	W	F-4	F-6
Jungle	-4	-3	W	W	W	W	W+2	F-6
Broken Ground	-3	-3	W	W	W	W	F-4	F-6
Swamp or Marsh	-2	+4	S-6	A+2	W	W	F-4	F-6
Beach or Shore	+3	+2	S+1	A+2	W	W	F-4	F-6
Riverbank	+1	+1	S-4	A	W	W	W	F-6
Shallow Sea	+4	+1	S+4	S+2	S	S	F-4	F-6
Open Ocean	+4	-4	S+6	S+4	S+2	S	F-4	F-6
Deep Ocean	+4	+2	S+8	S+6	S+4	S+2	S	S-2

Animal's Niche and Subtype

Choose one ecological niche for the animal, as desired or as required by an encounter table. The niches are Carnivore, Herbivore, Omnivore, or Scavenger. Throw 2D on the following table to determine the animal's subtype. Subtypes also determine the creature's speed, as detailed later in this chapter. The numbers in parentheses are the numbers of animals encountered per pack (or random encounter). If there is no number, only a single creature appears.

Animal Niche Table

2D	Animal Niche
2	Scavenger
3	Omnivore
4	Scavenger
5	Omnivore
6	Herbivore
7	Herbivore
8	Herbivore
9	Carnivore
10	Carnivore
11	Carnivore
12	Carnivore

Animal Subtypes

2D	Herbivore	Omnivore	Carnivore	Scavenger
1-	Filter (1D)	Gatherer	Pouncer	Carrion-Eater (2D)
2	Filter	Eater	Siren	Reducer (1D)
3	Intermittent	Gatherer	Pouncer	Hijacker (1D)
4	Intermittent	Eater (2D)	Killer (1D)	Carrion-Eater (2D)
5	Intermittent (1D)	Gatherer	Trapper	Intimidator(1D)
6	Intermittent	Hunter	Pouncer	Reducer
7	Grazer	Hunter (1D)	Chaser	Carrion-Eater (1D)
8	Grazer (1D)	Hunter	Chaser (3D)	Reducer (3D)
9	Grazer (2D)	Gatherer	Chaser	Hijacker
10	Grazer (3D)	Eater (1D)	Killer	Intimidator (2D)

11	Grazer (4D)	Hunter (1D)	Chaser (2D)	Reducer (1D)
12	Grazer (5D)	Gatherer	Siren	Hijacker
13+	Grazer	Gatherer	Chaser (1D)	Intimidator (1D)

Carion-Eater (vulture): scavengers who wait for all other threats to disperse before eating. Gain DM+1 to surprise rolls.

Chaser (wolf): carnivores who chase and exhaust their prey.

Eater (army ant): omnivores who eat anything they encounter, including adventurers.

Filter (earthworm): herbivores who pass the environment through their bodies and draw essential nutrients from it.

Gatherer (chimpanzee): omnivores who collect and store food. Gain DM+1 to surprise rolls.

Grazer (antelope): herbivores who move from food source to food source and spend a majority of their time eating.

Hijacker (lion): scavengers who steal the kills of others through brute force.

Hunter (baboon): omnivores who are opportunistic predators when easy prey presents itself.

Intermittent (elephant): herbivores who do not devote their entire time to searching for food.

Intimidator (coyote): scavengers who establish their claim to food by intimidating other creatures.

Killer (shark): carnivores with a raw, frenzied killing instinct.

Pouncer (cat): carnivores who stalk and ambush their prey. Gain DM+3 to surprise rolls.

Reducer (vermin): scavengers who devour any source of food, including remains left behind by other scavengers.

Siren (angler fish): carnivores who use a lure to attract prey. Gain DM+3 to surprise rolls.

Trapper (spider): carnivores who use traps to capture their prey. Gain DM+3 to surprise rolls.

Animal Size, Stamina, Lifeblood, and Damage

For each creature, throw 2D for size, applying any size DMs from the Terrain and Movement table. Size determines the creature's Lifeblood, Stamina, and damage. As for sentient beings, Stamina and Lifeblood indicate how much damage the animal can take. Throw for two numbers as indicated on the table. The first number is Stamina; the second is Lifeblood. The damage column modifies the amount of damage dice the animal's attacks inflict. See the animal weapons table for the baseline damage. For example, if a weapon causes 2D damage by default but the "Damage Modifier" column indicated -1D, this animal's weapon will only cause 1D damage. The entry "x2", on the other hand, will modify the damage to 6D. If the table reduces a weapon's damage dice to zero, and each attack causes only 1 point of damage.

Animal Size

2D	Weight (kg)	Stamina/Lifeblood	Damage Modifier
1-	1	1/1D	-2D
2	3	1D/1D	-2D
3	6	1D/2D	-1D
4	12	2D/2D	-
5	25	2D/3D	-

6	50	2D/4D	-
7	100	2D/5D	-
8	200	3D/5D	+1D
9	400	3D/6D	+2D
10	800	3D/7D	+3D
11	1600	3D/8D	+4D
12	3200	4D/8D	+5D
13	5000	4D/9D	+6D
14	10000	5D/10D	x2
15	15000	5D/12D	x2
16	20000	7D/14D	x3
17	25000	7D/15D	x4
18	30000	8D/16D	x4
19	35000	9D/17D	x5
20+	40000	9D/18D	x6

Animal weapons, armor, and base speed

Throw 2D on the following table to indicate the animal's natural weapon and base damage. DM+8 for carnivores; DM+4 for omnivores; DM-6 for herbivores. Animals with two different weapons attack twice. A +X after a weapon's name indicates a positive DM to attack throws.

Animal Weapons

2D	Weapons	Damage
1-	Hooves	2D
2	Hooves and Horns	2D/2D
3	Horns	2D
4	Hooves and Teeth	2D/2D
5	Horns and Teeth	2D/2D
6	Thrasher	3D
7	Claws	2D
8	Teeth	2D

9	Claws and Teeth	2D/2D
10	Claws+1	2D
11	Stinger	3D
12	Teeth+1	2D
13	Claws+1 and Teeth+1	2D/2D
14	Claws+1 and Stinger+1	2D/3D
15	Claws+2	2D
16	Teeth+2	2D
17	Claws+2 and Teeth+2	2D
18	Claws+2 and Stinger+2	2D/3D
19+	Projectile	As Weapon

Throw 2D-7 on the following table to determine the animal's armor rating, adding the number you rolled on the size table as a positive DM. Further DM+4 for herbivores; DM+2 for scavengers; and DM-2 for carnivores. Flyers suffer an additional DM-2 on this table



Animal Armor

2D	Armor
1-	0
2	0
3	0
4	1
5	1
6	2
7	2
8	3
9	3
10	4
11	4
12	5
13	6
14	7
15	8
16	9
17+	10



Animal Movement Speed

Finally, consult the following table to determine the animal's movement speed. The table generates speed multipliers; multiply this by 10 (a human's average walking speed) to get the animal's speed in meters per combat round.

Animal Movement Speed

Type	Speed Multiplier	Minimum Speed (in m/action)
Carnivore		
Chaser	1D-2	20
Killer	1D-3	10
Pouncer	1D-4	10
Siren	1D-4	0
Trapper	1D-5	0
Herbivore		
Filter	1D-5	0
Grazer	1D-2	20
Intermittent	1D-4	10
Omnivore		
Eater	1D-3	10
Gatherer	1D-3	10
Hunter	1D-4	10
Scavenger		
Carrion-Eater	1D-3	10
Hijacker	1D-4	10
Intimidator	1D-4	10
Reducer	1D-4	10

Animal Reactions

The animal's ecological subtype influences its reaction in encounters with people, such as colonists and adventurers. When characters provoke an animal, or simply enter the territory of a more aggressive species, throw 2D and consult the following table. An entry of "Attack 6+" and "Flee 3-", for example, means that if the reaction roll is 6 or more the animal will attack, and if it is 3 or less, it will flee. If the roll is between these numbers, the animal ignores the characters until provoked again.

Animal Reactions

Type	Attack	Flee
Carnivore		
Chaser	Will attack if the animals outnumber the characters.	5-
Killer	6+	3-
Pouncer	Attacks if it has surprise.	Flees if surprised.
Siren	Attacks if it has surprise.	4-
Trapper	Attacks if it has surprise.	5-
Herbivore		
Filter	10+ if possible	5-
Grazer	8+	6-
Intermittent	10+	4-
Omnivore		
Eater	5+	4-
Gatherer	9+	7-
Hunter	6+ if larger than at least one character. 10+ otherwise.	5-
Scavenger		
Carrion-Eater	11+	7-
Hijacker	7+	6-
Intimidator	8+	7-
Reducer	10+	7-

Appendix - Cheating Death!

Death needs not be final! In advanced societies, technology permits, at a significant economic cost, to attempt and bring the dead back to life.

Cyborg Conversion

Beginning at TL9, advanced technology can repair even a dead body, replacing dead tissues with chromium and steel. Extremely invasive cybernetics can bring a dead or dying person back to life if their brain remains relatively intact and the body is not overly mangled. Only the best hospitals offer this treatment, typically requiring many physicians, nurses, and technicians to perform.

Cyborg conversion costs MCr6. As part of the conversion, any additional cybernetic implant may be installed at 75% of list price, since the massive cyber-surgery makes such installation easier. Note that dead bodies decompose with time and cyborg conversion cannot restore anyone who has been dead for over a month. However, a cryotube can preserve a body indefinitely, so long as it remains functional. When performing cyborg conversion, the head surgeon makes a Medicine/INT 10+ throw. The result of the surgery depends on the Effect of this Medicine check, as shown on the table below.



Effect	Result
-6	The character cannot be revived even with advanced cybernetics and remains dead. Nothing further can bring the character back to life.
-5	The cyborg arises from the dead but is violently and irreparably insane due to faulty wiring and programming. The character awakens and attacks everyone next to them with murderous rage. The character cannot be subdued and later repaired. They must be terminated.
-2 to -4	The procedure fails. Further cyborg conversion or bio reconstruction attempts can be made, but at a DM-2 and double the cost. Negative DMs and cost multiplication are cumulative for repeated attempts, e.g., a third cyborg conversion attempt after failing twice will suffer DM-4 and will cost four times as much.
-1	The character returns to life with 1 point of Lifeblood! However, their body did not recover well from the cybernetic implantation process, which causes severe side effects. Roll 1D6: 1-2, the character loses their memory; 3-4, the character is only partially alive and suffers from cybernetic mismatch; 5-6, the character will occasionally suffer from sudden and unexpected fits of murderous rage. See below for descriptions of these states. Further surgeries and healing attempts follow the standard healing rules.
0	The character returns to life with 1 point of Lifeblood, though they still bear marks of their terrible injury. Roll 1D6: 1-2 the character suffers from partial memory loss; 3-4, the character will have severe recurring nightmares; 5-6, the character will undergo a profound personality change. Further surgery and healing follow the standard healing rules.
1 to 5	The character returns to life with 1 point of Lifeblood and will recover fully with proper medical care. However, they suffer moderate damage due to imperfect cyber-implantation. Roll 1D6: 1-2, the character will be sickly; 3-4, the character suffers physical characteristic loss; 5-6, the character suffers from shaking. Further surgery and healing follow the standard healing rules.
6+	The character is lucky and awakens with full Lifeblood and Stamina and no perceptible side effects. No further healing required!

General DMs: Apply any relevant modifiers to all cyborg conversion attempts.	
Circumstance	DM
TL9 and TL10	DM-2
TL14+	DM+2
Per previous cyborg conversion	DM-2
More than 24 hours have passed since the character's death	DM-1
More than one week has passed since the character's death	DM-3
More than a month has passed since the character's death	Automatic failure
Character's body was cryogenically preserved and thawed out	DM-2

Cyborg Conversion Side Effects

Here is a list the effects of the various side effects caused by less-than-perfect cybernetic conversions.

Cybernetic Mismatch: The character is neither alive nor dead, and teeters constantly on death's door. They are kept alive only by cybernetics, whilst simultaneously suffering from cybernetic rejection. The character suffers DM-2 to all throws and only has half of their movement rate: in most cases, 5 meters per action. Every month, the character must roll END 8+ or die from cybernetic rejection.

Memory Loss, Full: The character suffers from complete amnesia, though they retain basic life skills and partial adventuring skills. Halve the character's EDU score, rounding down to a minimum of 1. Also, for **each** skill, throw INT 6+ or lose one level of the skill; a skill at level-0 reduced in such manner is lost.

Memory Loss, Partial: The character loses part of their memory but retains a general idea of their identity, as well as most skills. The character loses 1d3 points of EDU to a minimum of 1. Randomly choose **one** of the character's skills that are at level-1 or higher: reduce it to level-0.

Personality Change: The character retains their memories. However, their personality has changed dramatically and profoundly. The player and Referee should negotiate this change. We suggest using some of the random NPC motivation tables found in the Social Encounters chapter to guide the process.

Physical Characteristic Loss: The character did not heal properly and now suffers from reduced abilities. Roll 1D: 1-2, the character loses 1d3 points of Strength; 3-4, the character loses 1D3 points of Dexterity; 5-6, the character loses 1d3 points of Endurance. The affected characteristic cannot be reduced below 1.

Recurring Nightmares: The character suffers from traumatic memories of their otherwise lethal injuries. They suffer from negative emotions and severe recurring nightmares every night. In addition to being wildly unpleasant, these nightmares prevent healthy sleep. The character suffers from severe insomnia, leading to constant Fatigue. At the Referee's choice, this may be mitigated by stimulants – which, in turn, may be addictive.

Sickly: The character's body did not fully heal from the lethal trauma it suffered, as well as the cybernetic conversion. Their metabolism is now far weaker. Halve the character's Stamina score, rounding down to a minimum of 1. The character also suffers DM-2 to all rolls made to resist disease, poison, radiation, or any other biological effect.

Shaking: The character's cybernetic neural wiring and servos are not well-calibrated. They suffer from constant hand tremors, causing a DM-1 to skill and characteristic throws, as well as any other throws requiring steady hands.

Sudden Murderous Rage: The character awakens normally, but the cybernetic systems will develop critical and dangerous glitches. Whenever the Referee wishes, the character must throw INT 8+ or END 8+ (whichever is better) or fly into a murderous rage lasting 2D combat rounds, doing their best to kill any living or mechanical being in reach. After this violent break, they will return to normal and will not remember anything from their rage. We recommend that the possibility of a Sudden Murderous Rage might come up every week, or month, or whenever the character is under high stress situations, and something related to their trauma occurs. Referees are not encouraged to be particularly merciful...



Bio Reconstruction

At Tech Level 16, extremely advanced medical technology can perform miracles unimaginable by less advanced societies. By applying cutting-edge biotechnology, an advanced hospital or laboratory can grow back a dead body and restore it to full function. The only requirement for Bio Reconstruction is that the dead character's brain must be preserved in an intact enough state. This allows for the scanning of the brain's neural pathways for imprinting in the new body. Bio Reconstruction is a monstrously expensive process, and it requires an advanced and full-scale hospital with access to the best scientific facilities and a large crew of experts in medicine and biology. Unlike cyborg conversion, however, this process is far less invasive and has a better chance of success.

The procedure costs MCr60 – as much as a small starship. In most cases, a patron of some sort will fund the procedure, usually in return to massive favors owed by the reborn subject. Note that dead bodies decompose with time and even this advanced method of bio reconstruction cannot restore a person dead for over a year; a cryotube can, however, preserve a body indefinitely. When performing the bio reconstruction, the head scientist makes a Medicine/EDU 10+ check. The result depends on the Effect of this Medicine check, as shown on the table below.

Bio Reconstruction Results

Effect	Result
-6	The attempt to revive the character failed, and no further attempts will succeed. The character is dead.
-5	The procedure fails. Further Bio Reconstruction attempts may be made, but at DM-2 and double the cost. Negative DMs and cost multiplication are cumulative for repeated attempts, e.g., a third Bio Reconstruction attempt after failing twice will suffer DM-4 and will cost four times as much.
-4 to -1	The character returns to life with 1 point of Lifeblood but suffers biological degradation. They will require 1D weeks of rest after emerging from the vat. Roll 1D: 1-4, the character loses their memory; 5, the character suffers from an incurable malignant illness; 6, the character will suffer from progressive dementia due to faulty brain reconstruction and imprinting. Further surgery and healing follow standard rules.
0	The character returns to life with 1 point of Lifeblood, though not perfectly so. Roll 1D: 1-2 the character suffers from partial memory loss; 3-4, the character's appearance changes radically; 5-6, the character undergoes a profound personality change. Further surgery and healing follow standard rules.
1 to 5	The character has been regenerated to 1 point of Lifeblood and will recover normally with medical care. Roll 1D for side effects: 1-2, the character suffers from a significant but non-debilitating disfigurement; 3-4, the character's appearance changes partially; 5-6, the character undergoes a physical characteristic change. Further surgery and healing follow standard rules.
6 or more	The character is lucky and awakens with full Lifeblood and Stamina, and no perceptible side effects.

General DMs: Apply any relevant modifiers to all bio reconstruction attempts.	
Circumstance	DM
Per previous successful cyborg conversion	-2
Per previous successful bio reconstruction	-1
More than a week has passed since the character's death	-1
More than one month has passed since the character's death	-3
More than a year has passed since the character's death	Automatic failure
Character's body was cryogenically preserved and thawed out	-2

Bio Reconstruction Side Effects

These are the various side effects and problems caused by partially successful Bio Reconstructions:

Appearance Change, Radical: The character looks like a completely new person and is unrecognizable by anything short of a genetic test. Even the fingerprints change. The exact details of this change are up to the Referee and player.

Appearance Change, Partial: The character looks similar to their old self, but not exactly so. People who know the character may attempt to recognize them on a successful INT 6+ throw. Other details and consequences of this change are up to the Referee and player.

Disfigurement: The character suffers a terrible disfigurement that no surgery may correct. It is not debilitating but is ghastly to look at and incurs DM-2 to any skill or characteristic throws related to diplomacy or persuasion. However, the character gains a DM+2 to any roll related to intimidation. The character is also easily recognizable.

Malignant Illness: Faulty genetic reconstruction causes a persistent, incurable malignancy in the character's body. Halve all physical Characteristics and round down to a minimum of 1. Furthermore, each month the character must throw END 8+ or die from the illness. Bio reconstruction, cyborg conversion, or any other procedure cannot restore a character who died in such a way. This is a good opportunity to tie up any loose ends from the character's previous life. They are living on borrowed time.

Memory Loss, Full: The character suffers from complete amnesia, though they retain basic life skills and partial adventuring skills. Halve the character's EDU score, rounding down to a minimum of 1. Also, for **each** skill, throw INT 6+ or lose one level of the skill; a skill at level-0 reduced in such manner is lost.

Memory Loss, Partial: The character loses part of their memory but retains a general idea of their identity, as well as most skills. The character loses 1d3 points of EDU to a minimum of 1. Randomly choose **one** of the character's skills that are at level-1 or higher: reduce it to level-0.

Personality Change: The character retains their memories. However, their personality has changed dramatically and profoundly. The player and Referee should negotiate this change. We suggest using some of the random NPC motivation tables found in the Social Encounters chapter to guide the process.

Physical Characteristic Change: The character's new body grows differently than the last one. Roll 2D three times and assign the values to the three physical characteristics, STR, DEX, and END, as desired.

Progressive Dementia: The character's brain was not properly restored and will deteriorate with time. Each month, the character loses 1d3 points of INT and 1d3 points of EDU. When any of these characteristics reaches zero or below, the character falls into a vegetative state and will die within 1D months. If both fall below zero on the same month, the character suffers a stroke and dies immediately.



Appendix - Aliens

Grand interstellar drama often calls for sentient aliens. Unlike the unfathomable alien life of a hard-science universe, the following three species follow common space-opera tropes. They are humanoid, reminiscent of Terran animals, and in one case – inspired by pop-culture UFO lore. These aliens are close enough to humans to be playable without much work.

Under these rules, aliens use the same careers as humans do, but have alien traits that set them apart from humanity. For more detailed alien species and cultures, as well as advanced alien character generation, we recommend our grand space-opera setting: *These Stars Are Ours!* available from Stellagama Publishing in PDF and print-on-demand formats.

Grays

Short in stature but intellectually powerful, the gray aliens are a staple of science fiction and popular culture. Common lore has them flying in saucers and abducting people for horrific scientific experimentation. All grays are biologically female. They reproduce asexually, each daughter being a clone of her mother with minimal variation. Curiosity drives the grays and they value rationality; they are excellent scientists and strategists. They are, however, poor fighters, and prefer to use technology and the slave races they have subjugated to fight their battles.

Grays have the following traits:

- Injured or sick grays require a medical facility (or tools) of TL10 or better, otherwise they suffer DM-2 to any related medical throws.
- Grays do not need to acclimatize to low-gravity environments.
- At character generation, grays roll 1D for STR and 1D for END, but 3D for DEX and INT.

Reptiloids

These warm-blooded reptile-like aliens bring the might of the monitor lizard and the agility of the gecko to the stars. Males are taller and stronger than humans, while females are human-sized. Civilization transformed the male reptiloid's murderous territorial instincts into a less destructive, but always present, competitive streak. A male reptiloid lives and dies for glory - constantly proving his mettle to his peers and vying for higher spots in his social pecking order. Females, on the other hand, consider the big picture issues important to reptiloid tribal society: government, commerce, and technical development. The males, and to a lesser degree the females, are excellent warriors, though many try their hand in commerce (and piracy!) as well.

Reptiloids have the following traits:

- See twice as far as humans in low-light conditions.
- DM+2 to all Athletics throws to climb. May cling to walls and ceilings on a successful throw of Athletics 8+ per round of clinging.
- Reptiloids do not suffer hourly damage from hot weather exposure up to 50°C.
- Males enjoy a +1 bonus to STR and a penalty of -2 to INT; females enjoy a +1 bonus to EDU and a penalty of -2 to STR. This cannot bring INT or STR to less than 1.

Insectoids

The Insectoids were once the pests living in the detritus of another more advanced civilization. But that civilization fell, and the Insectoids soon thrived in their precursors' ruins. Opportunistic and hardy, these bug-folk quickly learned how to bring their world's old masters' technology back to life. This has enabled them to skip many millennia of cultural evolution. They are expert tinkers, peddlers of trinkets, and boundless opportunists. Terrans may deride them as space cockroaches, but still enjoy their trade and diplomatic neutrality, nonetheless.

Insectoids have the following traits:

- Fast-growing. Start their career at the age of 10 and start aging after their third term, at the age of 22. May use career tables for up to 5 terms.
- 2 points of natural armor. Non-cumulative with worn armor heavier than Jack.
- Insectoids do not need to acclimatize to low-gravity environments.
- -2 penalty to EDU. This cannot bring EDU to less than 1.
- DM+2 to any throw to avoid poison or disease; DM+2 to any throw to cure an insectoid from a poison or a disease.
- As an action, an insectoid may throw Athletics 6+ to jump 6m in any direction.

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